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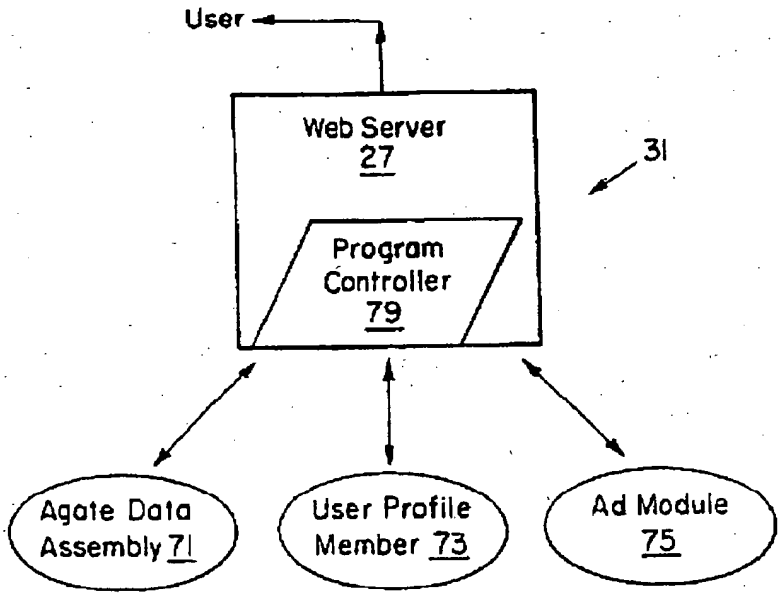
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(54) **METHODE ET RESEAU INFORMATIQUES PERMETTANT DE DETERMINER LE COMPORTEMENT DES UTILISATEURS**

(54) **COMPUTER NETWORK AND METHOD FOR DETERMINING USER BEHAVIOUR**



(57) Méthode et dispositif liés à un réseau informatique et permettant de cibler le public désiré sur la base du profil psychographique ou comportemental des utilisateurs finaux. On obtient le profil psychographique de l'utilisateur final en enregistrant ses activités informatiques et ses habitudes de visionnement. Le profil psychographique de l'utilisateur, fondé sur ses habitudes de visionnement des données de référence dites "agate", permet de révéler le contenu des catégories qui l'intéressent ainsi que le format de visualisation pour chaque catégorie. En utilisant ledit profil (avec ou sans analyse démographique supplémentaire) on adresse les

(57) Computer network method and apparatus provides targeting of appropriate audience based on psychographic or behavioral profiles of end users. The psychographic profile is formed by recording computer activity and viewing habits of the end user. Content of categories of interest and display format in each category are revealed by the psychographic profile, based on user viewing of agate information. Using the profile (with or without additional user demographics), advertisements are displayed to appropriately selected users. Based on regression analysis of recorded responses of a first set of users viewing the advertisements, the target user profile

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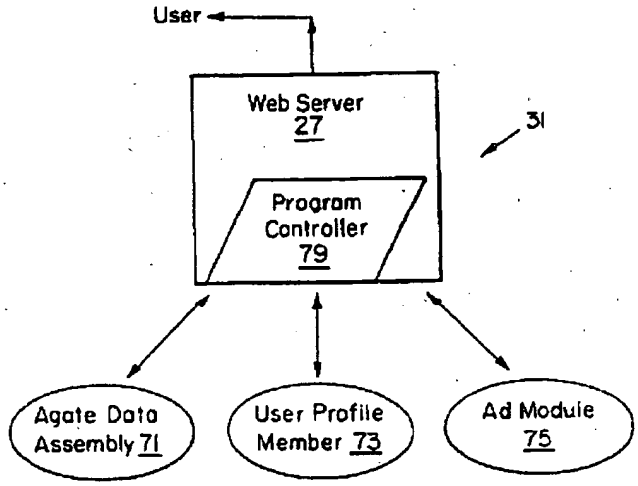
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(57) Abstract

Computer network method and apparatus provides targeting of appropriate audience based on psychographic or behavioral profiles of end users. The psychographic profile is formed by recording computer activity and viewing habits of the end user. Content of categories of interest and display format in each category are revealed by the psychographic profile, based on user viewing of agate information. Using the profile (with or without additional user demographics), advertisements are displayed to appropriately selected users. Based on regression analysis of recorded responses of a first set of users viewing the advertisements, the target user profile is refined. Viewing by and regression analysis of recorded responses of subsequent sets of users continually auto-targets and customizes ads for the optimal end user audience.

CLAIMS

1. In a computer network (19) formed of a communication channel (23) and a plurality of digital processors (11,13,15,17,21) coupled to the communication channel (23) for communication thereon, computer apparatus (31) characterized by:

a data assembly (71) for providing agate information to users of the computer network (19), in response to a user request the data assembly (71) transmitting desired agate information across the communication channel (23) to one of the digital processors (11,13,15,17,21) for display of the desired information and viewing by the user; and

a tracking and profiling member (73) responsive to the data assembly (71), in response to physical activity by a user during viewing agate information obtained through the data assembly (71), the tracking and profiling member (73) recording indications of user physical activity with respect to display of the agate information and therefrom building a psychographic profile of the user.

2. Apparatus as claimed in Claim 1 wherein the data assembly (71) provides at least one of stock and market data, theater and television schedules, sports statistics, weather information, travel information and Directory information.

3. Apparatus as claimed in Claim 1 wherein:

the tracking and profiling member (73) records format preferences of users with respect to presentation of certain agate information, the format preferences including color schemes, text size and shapes; and

in response, the data assembly (71) displays agate information to a user (a) in a manner customized according to the format preferences of the user and (b) having contents corresponding to the psychographic profile of the user.

4. Apparatus as claimed in Claim 3, wherein the tracking and profiling member (73) further records demographic information of the user such that demographic profiles of users are provided and the data assembly (71) further displays agate information to a user according to demographic profile of the user.

5. Apparatus as claimed in Claim 1 further comprising an advertising component (75) coupled between the data assembly (71) and tracking and profiling member (73), the advertising component (75) holding a plurality of advertisements to be displayed to users on the network (19), in accordance with the psychographic profiles of the users, and for each advertisement, the advertising component (75) providing a target profile of desired users to whom to display the advertisement.

6. Apparatus as claimed in Claim 5 wherein the tracking and profiling member (73) further provides demographic information about a user; and for each advertisement, the data assembly (71) transmits the advertisement for display with agate information to users having a psychographic profile and a demographic profile substantially matching the target profile of the advertisement to provide targeted marketing.

7. Apparatus as claimed in Claim 5 wherein the advertising component (75) further records history of users viewing the advertisements, including for each advertisement, at least one of (i) number of times viewed by a user, (ii) number of times selected for further information, and (iii) number of times a purchase was obtained through the advertisement.

8. Apparatus as claimed in Claim 7 further comprising a subroutine (79,41) coupled to the advertising component (75) for performing a regression analysis on the history of users viewing the advertisements, and therefrom the subroutine (79,41) refining the advertisement target profiles of desired users to whom to display the advertisements.

9. In a computer network (19) formed of a communication channel (23) and a plurality of digital processors (11,13,15,17,21) coupled to the communication channel (23) for communication thereon, a method for forming user profiles characterized by the steps of:

providing agate information (71) for viewing by users of the network (19);

for each user, recording history (73) of physical activity by the user with respect to display of the agate information (71);

from the recorded history (73), forming user profiles of the users, each user profile providing an indication of categories of interest to the user and display preferences for each category.

10. A method as claimed in Claim 9 wherein the step of providing agate information (71) includes providing at least one of stock data, media schedules, sports news, weather information, travel information, and directory information.

11. A method as claimed in Claim 9 wherein the step of providing agate information (71) includes displaying advertisements (75) to users by (i) providing advertisements, (ii) for each advertisement, providing a target profile of desired users to whom to display the advertisement, and (iii) for each user, comparing user profile to target profiles of the advertisements and displaying advertisements having target profiles substantially matching the user profile.

12. A method as claimed in Claim 11 wherein the step of recording further records user viewing activity (37f) with respect to displayed advertisements; and further comprising the step of continually refining target profiles of desired users to whom advertisements are to be displayed by (a)

performing regression analysis (41) of recorded user viewing activity (37f) with respect to each advertisement, and (b) for a given advertisement, weighting importance of target profile characteristics based on the regression analysis such that the step of comparing finds a substantial match between a user profile and the target profile upon a total score of the target profile characteristics that match characteristics of the user profile meeting a predefined threshold.

13. In a computer network (19) formed of a communication channel (23) and a plurality of computers (11,13,15,17,21,25,27) coupled to the communication channel (23) for communication thereon, a method for defining profiles of target user characterized by the steps of:

(a) providing a source of information (71,75) including agate information, the source (71,75) holding a multiplicity of pieces of information;

(b) for each of certain pieces of information in the source (71,75), setting respective initial profiles of target users to receive the certain piece of information;

(c) transmitting each of the certain pieces of information across the communication channel (23) such that each is displayed only to users having a profile substantially matching the respective initial profile of the certain piece of information;

(d) recording computer activity (73) of users viewing the certain pieces of information;

(e) redefining the initial profiles of target users based on a regression analysis (41) of the recorded computer activity (73) of users, said redefining forming respective adjusted profiles of target users for each of said certain pieces of information; and

(f) continually repeating steps (c) through (e) with the adjusted profiles of the certain pieces of information, such that the certain pieces of information over time, become better targeted to users having an interest in said information and hence said method is self-tailoring.

14. A method as claimed in Claim 13 wherein the step of providing a source (71,75) of information further includes providing advertisements as the certain pieces of information.

15. A method as claimed in Claim 14 wherein the step of setting respective initial profiles of target users includes allowing sponsors of the advertisements to indicate relative importance of demographic and psychographic criteria of target users.

16. A method as claimed in Claim 15 wherein the step of redefining the profiles of target users includes using the regression analysis (41) to weight importance of the demographic and psychographic criteria of target users.

AMENDED SHEET

17. A method as claimed in Claim 13 wherein the step of recording provides psychographic profiles of users; and

the step of redefining is further based on a regression analysis (41) of the psychographic profiles of users as recorded in the recording step.

18. Method as claimed in Claim 13 wherein the step of transmitting includes displaying to users agate information in real time of events generating the agate information.

19. Method as claimed in Claim 18 wherein the step of transmitting and displaying includes displaying agate information in predefined schedules to coordinate with at least one of television and radio broadcast of events generating the agate information.

20. Method as claimed in Claim 18 wherein the step of displaying agate information further includes updating of the information, in real-time of the events generating the agate information, in a manner such that the agate information is viewable alongside television viewing of said events.

21. Apparatus as claimed in Claim 8 wherein for each advertisement, the subroutine (79,41) includes performing a regression analysis and refining the target profile of the advertisement upon a user viewing the advertisement, such that the target

profiles of the advertisements are refined in real time.

22. A method as claimed in Claim 16 wherein the step of transmitting includes (a) determining appropriateness of each of the certain pieces of information with respect to each user, by matching the weighted demographic and psychographic criteria to characteristics of the profile of the user, upon a total score of the matching meeting a predefined minimum desired score, the piece of information being determined to be appropriate for the user; and (b) ranking the certain pieces of information determined to be appropriate with respect to a user such that said ranked certain pieces of information are transmitted in order to the subject user.

23. A method as claimed in Claim 22 wherein the step of redefining profiles of target users is performed in real time of subject users viewing the certain pieces of information, such that the step of determining appropriateness constantly updates which of the certain pieces of the information is to be transmitted to each of subject users.

24. A method as claimed in Claim 13 wherein the step of redefining the profiles of target users includes performing the regression analysis (41) in real time of users viewing and interacting with the certain pieces of information, such that the profiles of target users are redefined throughout transmission and display of the certain pieces of information in the computer network (19).

25. A method as claimed in Claim 13 further comprising the step of defining, for each user, a user profile based on the recorded computer activities (73) of the user with respect to pieces of information viewed by the user, each user profile indicating preferences in content and presentation of information to that user, said step of defining a user profile including determining the user profile upon user interactivity with displayed information, through input means coupled to a computer (11,13,15,17,21,25,27), coupled to the computer network (19).

26. A method as claimed in Claim 14 further comprising the step of reporting the continually adjusted profiles of target users of the advertisements and user profiles to whom the advertisements have been transmitted, said reporting being accomplished during the continual repeating of steps (c) through (e), such that said reporting is in real time of users viewing the advertisements and the adjusted profiles being redefined.

27. A method as claimed in Claim 26 wherein the step of reporting includes displaying to sponsors of the advertisements, characteristics of the adjusted profiles each time the profiles of target users is redefined, such that sponsors are able to view in real time the advertisements becoming better targeted.

based on the recorded computer activities of the user with respect to pieces of information viewed by the user, each user profile indicating preferences in content and presentation of information to that user, said step of defining a user profile including determining the user profile upon user interactivity with displayed information, through input means coupled to a computer, coupled to the computer network.

27. A method as claimed in Claim 15 further comprising the step of reporting the continually adjusted profiles of target users of the advertisements and user profiles to whom the advertisements have been transmitted, said reporting being accomplished during the continual repeating of steps (c) through (e), such that said reporting is in real time of users viewing the advertisements and the adjusted profiles being redefined.

28. A method as claimed in Claim 27 wherein the step of reporting includes displaying to sponsors of the advertisements, characteristics of the adjusted profiles each time the profiles of target users is redefined, such that sponsors are able to view in real time the advertisements becoming better targeted.

COMPUTER NETWORK AND METHOD FOR DETERMINING USER BEHAVIOUR

Background

In traditional print media, the term "agate" was originally used to refer to any information printed in columns 1.5 inches wide in 5 point type (e.g., stock quotes). Today, agate is used to refer to time-sensitive, reference information that is not read linearly. Examples are telephone listings, classified advertisements, weather reports, sports scores and statistics, market data, books and recordings in print, and television and film listings.

Some types of agate require continual updating in the short term, like stock quotes, while other types have a longer life, like travel information and business directories. The newspaper industry is one of the primary suppliers of agate. Newspapers provide listings of stock quotes, television and radio programming, film schedules, and classified ads. A second group of agate suppliers are book publishers. From travel guides to books in print, a wide variety of books provide agate information that changes monthly or yearly.

Although many types of agate are traditionally found in publications (e.g., newspapers, magazines, and books), all agate can be placed into large indexed databases. Because agate is non-linear reference material, it is often more efficient to search for agate in a database, than to scan columns of a newspaper.

One of the largest pools of databases and electronic media is found on The Internet. The World Wide Web (Web) is a two-year-old protocol used to create and publish documents on the Internet. Web documents

may contain graphics, text, sound, video or any combination of these. Web documents can include "hyperlinks" which are highlighted areas of information in one document that, when user-selected, open a related document. In late 1994, "forms" were added to the Web to make it interactive. Previously, Web pages could only be used to display information or point to other Web sites where information was available. The 1994 change allowed those publishing Web pages to publish "forms", i.e., documents that include blank spaces to be completed by users and then returned to the publishing computer, thus allowing interactivity.

Publishing information on the Web requires two software components. Electronic publishers must run HyperText Transfer Protocol (HTTP) server software. Users scanning or searching on the Internet must use Web browser software. A variety of firms including Microsoft, Oracle, Netscape Communications, Spyglass, Spry, Netcom, and EINet all distribute Web software.

A variety of businesses are now offering information, some of it agate, on the Internet. One example is newspaper distribution on the Internet. However, the agate found in newspapers is at least twelve hours old. In the case of stock quotes, the information found usually recaps trading for the previous day, listing the high, low and closing prices as well as the number of shares traded. While this information is sufficient for tracking investments, investors often require real-time information to trade on the market.

Other examples of businesses that offer agate information on the Internet are Movie Phone whose World Wide Web Site is WWW.777film.com and Securities APL (at WWW.secapl.com) which allows users to look up individual stock quotes (delayed 15 minutes).

To date, however, there is no general agate provider on the Web.

Kaplan et al. in U.S. Patent No. 5,446,891 disclose an interface technique for reorganization of retrieved documents in a hypermedia system. Hypermedia is a class of computer systems which exploit the computer's ability to link together information from a wide variety of sources. Such systems embrace large numbers of data objects and each data object is said to reside at a node and may vary in size and type. A collection of such data objects is denominated a hypermedium. For data objects limited to text panels (blocks of text data of varying size), the collection is referred to as a hypertext document. While most paper documents lead the user down a rigid sequential path, hypertext documents provide users with links to choose one of many different paths. A link is a user-activated control reference that causes the data object at the linked target node to be displayed. Normally hypertext systems are window based and the newly displayed object appears in a new window. The new object or panel may, of course, contain additional links to other such panels. By following these links from panel to panel, the user "navigates" through and about the hypertext document. This scheme provides user control over the order of presentation of information and permits the user to select what is of interest and how to pursue a given topic.

The user interface invention of Kaplan incorporates links between all nodes within a hypermedium. In addition, Kaplan introduces the concept of graduated link-weight values for ordering the linked nodes in a list so that the most relevant linked target appears first in a list presented to the user. To implement the foregoing, Kaplan provides a link matrix which is a set

of link weights relating the existing set of hypertext panel nodes to a new set of user goals. A selected user goal and a selected panel are together denominated as a user "context". Each such context corresponds to a unique set of link vectors. To recommend target panels to a user, Kaplan employs a relative link weight value representing the link between each panel node and all other panel nodes in the hypertext document. A relative weight link value is also introduced to represent the strength of the relationship between the user goals and the various panel nodes in the document.

In addition, Kaplan introduces a learning capability. In particular, Kaplan employs a first topic-to-topic (panel-to-panel) associative matrix and a second goal-to-topic associative matrix, and provides for the capability to combine linkage information from multiple matrices to arrive at a single set of recommendations in the form of a "user profile". The learning capability feature is a self-adaptive or learning feature for dynamically updating these link weight values in each associative matrix. Lastly, Kaplan discloses that many different "user profiles" may be accumulated and stored for later access by individual users having different interests.

In "Service Architecture, Prototype Description, and Network Implications of a Personalized Information Grazing Service" by Howard E. Bussey *et al.*, Institute of Electrical and Electronic Engineers Multiple Facets of Integration Conference, June 3-7, 1990, San Francisco, California, a passive information grazing system (PIGS) is disclosed. Information grazing is at the opposite end of the information access spectrum from

information hunting. In information hunting, the user actively engages in forming and transmitting search queries or utilization of hierarchical directories. On the other hand, in information grazing the user passively and in a largely unsolicited manner receives information from a variety of heterogeneous, multimedia sources. To accommodate information grazing, on-line services must be designed as information delivery services rather than as information retrieval services. In PIGS, information articles in multimedia form are electronically transmitted to users over a prototype broadband network. PIGS selects information for individual users based on their personalized interest profiles. Thus PIGS is a prototype information delivery and filtering system for casual users. During presentation of articles that have passed through the filter, users' computers can record explicit or implicit feedback about each article. Based on the feedback, each user's profile can be automatically updated to track changed information needs of the user.

T.W. Yan *et al.* in "SIFT-A Tool for Wide Area Information Dissemination" in USENIX Technical Conference, 16 January 1995, discloses a tool to help provide information dissemination services in a wide-area information system. The user subscribes to the information dissemination service by submitting profiles that describe his interests. He then passively receives new, filtered information. SIFT supports full-text filtering using well known information retrieval models. The SIFT filtering engine implements indexing techniques capable of processing large volumes of information against a large number of profiles.

M. Panzanni et al. in "Learning from Hotlists and Coldlists: Towards a WWW Information Filtering and Seeking Agent", Proceedings of the International Conference on Tools with Artificial Intelligence, January 1995, disclose a software agent that learns to find information on the World Wide Web (WWW), deciding what new pages might interest a user. The agent maintains a separate hotlist (for links that were interesting) and coldlist (for links that were not interesting) for each topic. By analyzing the information immediately accessible from each link, the agent learns the types of information the user is interested in. This can be used to inform the user when a new interesting page becomes available or to order the user's exploration of unseen existing links so that the more promising ones are investigated first. Four different learning algorithms are compared on this task. An experiment is described in which a simple Bayesian classifier acquires a user profile that agrees with a user's judgment over 90% of the time.---

Summary of the Invention

The present invention uses agate information to determine the profile of a computer user, and in particular the behavioral or psychographic profile, as distinguished from the demographic profile, of a user. To accomplish this, the present invention provides (i) a data assembly for displaying customized agate information to a computer user, and (ii) a tracking and profiling member for recording user activity with respect to agate information displayed through the data assembly. Over time, the tracking and profiling member holds a history and/or pattern of user activity which in turn is interpreted as a user's habits and/or preferences. To that end, a psychographic profile is inferred from the recorded activities in the tracking and profiling member.

Further, the tracking and profiling member records presentation (format) preferences of the users based on user viewing activity. Preferences with respect to color schemes, text size, shapes, and the like are recorded as part of the psychographic profile of a user. In turn, the psychographic profile enables the data assembly to customize presentation (format) of agate information, per user, for display to the user.

In the preferred embodiment, the data assembly displays agate information and/or advertisements (combined in a common screen view or separately in respective screen views). The advertisements (stored in an advertisement module, for example) are displayed to users in accordance with the psychographic profile of the user.

The tracking and profiling member also records demographics of each user. As a result, the data assembly is able to transmit advertisements for display to users based on psychographic and demographic profiles of the user to provide targeted marketing.

In accordance with another aspect of the present invention, there is a module (e.g., advertisement module) that records history of users viewing the advertisements. For each advertisement, the module records (i) number of times viewed by a user; (ii) number of times selected for further information by a user, and/or (iii) number of purchases initiated from display of the advertisement to a user.

In addition, a subroutine coupled to the module performs a regression analysis on the recorded history of users viewing the ads. The subroutine refines profiles of target users based on the regression analysis. Preferably, the regression analysis weights the relative importance of psychographic and/or demographic characteristics of users. As such, over time, the advertisements become better targeted to users having an interest in said information (content and presentation/format of ad), and hence the invention method and apparatus provides automatic targeting of audiences (target users) and self-tailoring of target profiles.

The preferred embodiment utilizes object oriented programming techniques to provide a User Object. The User Object tracks user actions in a history profiling table. The User Object utilizes an updating routine which maintains the history profiling table by storing in the table an indication of a user's actions, i.e., computer activities, with respect to displayed agate information.

In accordance with another aspect of the present invention, there are Agate Objects for providing the agate information and a Sponsor Object. In a preferred embodiment, the agate information includes stock information, advertisements, sports statistics, weather reports and the like. With regard to stock information, an Agate Object routine receives stock data on line, parses the data and makes a value-added calculation. As

a result, the stock information is made searchable by variables such as price-earnings ratio, and the like.

The Sponsor Object categorizes advertisement or other sponsor provided information according to content and presentation, including colors used, size, shape, and whether audio and/or video components are involved. An advertiser profile building routine automates the process of identifying colors, size, shape, and whether video and/or audio are involved.

Also the Sponsor and User Objects track how many times each piece of advertisement information is shown to, is selected by and/or spawns a purchase by users. In other words, the Sponsor and User Objects track performance of sponsor provided information, especially advertisements. In the preferred embodiment, a performance routine employs regression techniques to provide performance reports. The performance routine may also be run (executed) remotely by suppliers of the advertisement information.

Brief Description of the Drawings

The foregoing and other objects, features and advantages of the invention will be apparent from the following more particular description of preferred embodiments and the drawings in which like reference characters refer to the same parts throughout the different views. The drawings are not necessarily to scale, emphasis instead being placed upon illustrating the principles of the invention.

Figure 1 is an overview of a computer network environment in which the present invention is employed.

Figure 2 is an overview of a general embodiment of the present invention.

Figures 3a-3g, 4a and 4b, and 5a-5d are schematic diagrams of a preferred embodiment.

Detailed Description of the Preferred Embodiment

Illustrated in Figure 1 is a plurality of networks 19a, 19b, 19c. Each network 19 includes a multiplicity of digital processors 11, 13, 15, 17 (e.g., PC's, mini computers and the like) loosely coupled to a host processor or server 21a, 21b, 21c for communication among the processors within that network 19. Also included in each network 19 are printers, facsimiles and the like. In turn, each host processor 21 is coupled to a communication line 23 which interconnects or links the networks 19a, 19b, 19c to each other to form an internet. That is, each of the networks 19 are themselves loosely coupled along a communication line 23 to enable access from a digital processor 11, 13, 15, 17 of one network 19 to a digital processor 11, 13, 15, 17 of another network 19. In the preferred embodiment, the loose coupling of networks 19 is the Internet.

Also linked to communication line 23 are various servers 25a, 25b which provide to end users access to the Internet (i.e., access to potentially all other networks 19, and hence processors 11, 13, 15, 17 connected to the Internet). The present invention is a software program 31 operated on and connected through a server 27 to the Internet for communication among the various networks 19 and/or processors 11, 13, 15, 17 and other end users connected through respective servers 25. In the preferred embodiment, the server 27 is a Digital Equipment Corp. Alpha server cluster (e.g., 2400-8000 Series), or a multiplicity of similar such servers. Server 27 runs Oracle 2.0 Webserver as HyperText Transfer Protocol (HTTP) server software to support operation of present invention program 31.

Upon an end user logging onto program 31 through common Internet protocol, program 31 generates an initial screen view (commonly known as the "Home Page") for display to the end user. During the user's first visit, the initial screen view provides menu selections

of various agate information (e.g., stock market data, weather, sports, etc.). Upon user selection (using a click of a mouse or other input means) of a menu item, program 31 displays corresponding up-to-date information. Similarly, each time the user selects another menu item, program 31 generates and displays current agate information relating to that selection.

In addition, program 31 records the user's selections and his viewing activity with respect to the agate information. In particular, for each piece of displayed agate information, program 31 records the date and time of user viewing and the format which the user has selected for viewing. After multiple sessions, a pattern of the user's viewing actions or viewing habits is obtained, from the recorded activity. In turn, certain inferences about the user are made based on the user's viewing habits and the specific pieces of agate information he views, including content and presentation of that information. To that end, for each user the present invention program 31 creates a user profile from the agate information viewing habits of the user. The system then generates a custom Home Page, including a user's preferred (content and presentation) agate information. On subsequent visits to program 31 (as a Website) by the user, program 31 displays the customized Home Page for that user instead of the initial Home Page.

Based on the created user profile for a given user, program 31 enables sponsors to better direct their advertisements and enables advertisements to be tailored to target users' display preferences. That is, both subject matter/content and presentation of advertisements are able to be customized to the end user's preferences due to the information tracked and recorded (i.e., the created user profile) by program 31.

Accordingly, program 31 in its most general form has an agate data assembly 71, a user profiling member 73, an advertisement module 75 and a program controller 79 as illustrated in Figure 2. The agate data assembly 71 stores the various agate information for user viewing. The user profiling member 73 records information regarding each user, including a user's identification, categories of interest and the user's display preferences of each category. Advertisement module 75 holds sponsor information and their advertisements, with a target audience profile indicated for each advertisement.

Program controller 79 is a series of routines (methods) on Web server 27.

The program controller 79 responds to commands (e.g., log in and menu selections) transmitted over the Internet by an end user, and obtains the necessary information from agate data assembly 71, user profiling member 73 and advertisement module 75 to generate and display appropriate screen views to the user.

In particular, in response to user login, program controller 79 checks with the user profiling member 73 to determine whether the user has in the past logged on to program 31 or is a new user. In the former case, according to records in the user profiling member 73, the program controller 79 obtains preference information for that user and using agate information from the agate data assembly 71 generates an initial screen view formatted according to the user's recorded preferences. Program controller 79 transmits the generated screen view through Web server 27 for display to the user.

In the latter case (a first time/new user), program controller 79 assigns a unique users computer ID upon user login. This, in turn, enables user profiling member 73 to initialize tracking of viewing activity of the new user immediately following login. Program controller 79 obtains initial agate information from

agate data assembly 71 to display the Home Page to the new user. Program controller 79 also obtains user identification information from the user to assign a user name and password at the user's convenience.

In either case, throughout the session, program controller 79 responds to user selections and viewing actions (screen formatting commands/requests, menu selections, etc.) by (i) using the agate data assembly 71 to obtain and display the requested information and (ii) using the user profiling member 73 to record the user's activities and thus build a psychographic/behavioral profile of the user.

With respect to the advertisement module 75, program controller 79 obtains sponsor submitted advertisements from module 75 and generates a screen view formatted according to user preferences as determined from the psychographic profile in the user profiling member 73. That is, program controller 79 enables display of advertisements customized to the user, as to content and presentation (i.e., colors used, orientation on the screen, audio/video components, and the like). Program controller 79 obtains the content from the advertisement module 75 and the presentation details for the subject user from the user profiling member 73.

In addition, for each advertisement, advertisement module 75 (and/or user profiling member 73) records (a) the number of times and/or number of users to whom the advertisement has been displayed, (b) the number of times/users who have requested more information (via a click of a mouse on a corresponding menu selection) regarding the advertisement, and when possible (c) the number of purchases obtained through program 31's display of the advertisement. As such, advertisement module 75 holds performance data for each advertisement, and hence enables program controller 79 to provide performance reports to sponsors who log on to program

31. Various regression techniques and the like are used in the performance reports in a manner consistent with the state of the art.

In the preferred embodiment, program 31 is implemented as an object oriented program discussed next with reference to Figures 3a through 5b. Each object is formed of data and subroutines (methods) for acting on the data. The data is preferably stored in tables and each table is formed of a multiplicity of records or fields of information. The information held in a record in respective tables of the objects is illustrated in Figures 3b through 5b and discussed below with the details of each object. It is understood however that other program means, techniques, data structures and program designs for present invention system 31 are suitable. Thus the details of the preferred embodiment in Figures 3a through 5b are for purposes of illustration and not limitation.

In Figure 3a, a set of User Objects 37 provides the functional equivalent of the user profiling member 73 of Figure 2. A set of Page Display Objects 35 provides the functional equivalent of agate data assembly 71 of Figure 2. A set of Sponsor Objects 33 provides the functional equivalent of the advertisement module 75 of Figure 2. The main routine 39 of program 31 in Figure 3a functions similarly to the program controller 79 of Figure 2 as will become apparent in the following discussion.

Turning to Figure 3a, the purpose of the set of User Objects 37 is to identify users and maintain a user profile for each user. Included in the set of User Objects 37 is general information about users and their computers, as well as specific data on each computer session undertaken by the users. In particular, for each set there is a User Object 37a. User Object 37a identifies a respective user by nickname (user chosen), password (user chosen), and optionally E-mail address,

postal address, telephone number, credit card number, and the like. User Object 37a also provides language, geographic, demographic and lifestyle information about the user. To accomplish this, User Object 37a stores a separate record for each of the above mentioned information, the collection of records forming the table or data of User Object 37a. Fig. 3b illustrates the fields or records of information employed by User Object 37a in the preferred embodiment.

Also for each user, there is a User Computer Object 37b and a User Interface Object 37c. For each user's computer, User Computer Object 37b provides an indication of the limitations and capabilities of the user's computer system. For example, User Computer Object 37b lists whether the user's system provides audio and/or video display, and what Web browser software is utilized by the user's system. An outline of the table/data set of a User Computer Object 37b in the preferred embodiment is illustrated in Fig. 3c.

The User Interface Object 37c provides a unique (preferably numeric) identifier of the user. The User Interface Object 37c also provides indications of categories of interest to the user and a primary screen display for each category customized to that user. The foregoing information is held in records illustrated in Fig. 3d. In the preferred embodiment, the various categories of interest include stock trading portfolio, sports, news, weather, theater and television schedules, telephone directory, travel data, classified ads and personals information, and the like. Display preferences include orientation, color scheme, screen quadrant/location and the like, indicated with respect to the category of information. For example, one user may tend to like stock information displayed in tabular form on a blue background and weather displayed on a map scene. Another user may prefer stock information displayed in a running 1-line quote at the bottom of the

screen and weather displayed in a tabular format by city on a green background, and so forth.

The history of user activity with executed program 31 is also maintained by the set of User Objects 37 (Fig. 3a). Specifically for each user, a User Session Object 37d, User Action History Object 37e and User Viewing History Object 37f record the following as illustrated in Figs. 3e-3g.

Each time a user logs on to program 31, User Session Object 37d records the starting date and time and ending date and time of the session. User Session Object 37d also records (a) the referring link from which the user accessed program 31 (e.g., a so called "bookmark" or "hyperlink" which effectively stores and forwards the Web site address of program 31), (b) the user's identification number (e.g., as stored in a so called "cookie" passed by the user's computer upon logging in), and (c) an indication of Web browser software employed by the user's computer. Fig. 3e illustrates the records created by User Session Object 37d to accommodate the foregoing data.

The User Action History Object 37e stores each click of a mouse and corresponding cursor position to effectively record the user's motions/movements in a session. In particular, as illustrated in Fig. 3f, User Action History Object 37e records (a) date and time of action, (b) session identifier (indicating in which session of the User Session Object 37d the subject action occurred), (c) sequence or order number of the action in the series of actions that occurred in a common session, (d) identification of screen view displayed at time action occurred, (e) identification of item selected by user (via click of mouse with cursor positioned on item), and (f) screen position of selected item (e.g., first, second or third menu item, right or left side).

The User Viewing History Object 37f stores information indicative of the screen views displayed to the user in a session. Specifically, User Viewing History Object 37f records an item identification (either agate or advertisement) and orientation of that item for each item displayed to (and hence viewed by) the user in a session. Orientation is noted relative to a page/screen view or an object identified in the "related object ID" field of the User Viewing History Object 37f. Preferably, orientation is indicated as being top, bottom, left, right or background of the screen view. The Viewing History Object 37f also records an identifier (of each screen view), ordinal sequence number (number order of screen view within series of screen views displayed in a session), and an indication of the action from which this screen view resulted (i.e., a reference to a corresponding User Action History Object 37e). Lastly, the User Viewing History Object 37f records date and time of screen opening and closing for each screen view. The foregoing is stored in an object table record illustrated in Fig. 3g.

Returning to Fig. 3a, the set of Page Display Objects 35a-35c defines the screen views transmitted and displayed to end users. A Page object 35a cross references a User Interface Object 37c which specifies which Page Display Object 35c and which agate information (content and presentation) is appropriate for the current user. Page Data Objects 35b hold the agate or other data to be displayed to end users. Included are advertisements (objects themselves) which may be integrated into the agate data. Preferably advertisements are positioned along the periphery (i.e., above, below, left or right) of the agate data, as defined by a respective Page Display Object 35c. Accordingly, Page Data Objects 35b support Page Display Objects 35c which outline the possible screen content

and presentation formats in which agate data advertisements are to be displayed.

In the preferred embodiment, Page Display Object 35c provides outlines for a Home Page, Financial Pages (screen views), Sports Pages (screen views), Weather Pages (views), a Media Schedule Page, Directory Page, Travel Options Page, Classified Ads Pages, and Real Estate Pages (screen views) as specified in Appendix I. Each is discussed next with reference to Figs. 4a-4b and Appendix I.

Referring to Fig. 4a, Page Display Object 35c defines a Home Page 43 format for program 31. The preferred Home Page format includes six categories of agate information-stock data, sports, weather, travel schedules, directory information and Classified/Personals/Real Estate messages. The stock data category provides portfolio information such as opening price per share, change in price from last posting, 52 week highs and lows, etc. If a user selects the stock data category (i.e., as a menu selection) for further viewing, a Page Display Object 35c in the form of a Financial Page (screen view) is generated in one of the alternative formats outlined in Appendix I.

Briefly, five types of Financial Pages Objects 35c are utilized by the preferred embodiment. They are named "Stock Page", "Company Page", "Expert Articles Page", "Expert Guide Page" and "Show Me Some Page" (see Appendix I). The "Stock Page" includes (a) data on user-selected stocks in a tabular format, a portfolio value graph and message window (for quickly moving companies present, and titles of articles by experts in the field), (b) a tracking list, (c) indices such as Dow Jones Industrial Average and NASDAQ, and (d) a ticker customized to the user (user-selected stock). The expert articles are formatted on screen views for display according to the "Expert Articles Page" format. The "Company Page" format includes the trading

symbol/code, stock information and corporate data about a specific company. The "Expert Guide Page" and "Show Me Some Page" formats enable the user to interactively create his own screen display of stock information. In particular, the Expert Guide Page surveys the user on his investment interests. Using the Expert Guide Page and Show Me Some Page formats, Page Display Object 35c then displays names of companies found to match the user provided criteria.

In each of the foregoing formats, the preferred embodiment includes incorporation of ads or sponsorship indications as top and/or closing banners. The Home Page 43 (Fig. 4a) provides scores of recent games and news in the "sports" category. If a user selects the sports category from the Home Page, a Page Display Object 35c generates various screens bearing sports information and news. For sports pages/screen views, there are seven page/screen formats of Page Display Object 35c outlined in Appendix I. Briefly, a "General Sports Page" format includes (a) game scores and standings, by league, for professional and collegiate sports, and (b) player standings (professional and collegiate) for baseball, football, hockey and basketball. Statistics are updated and displayed during play of a game, so that the General Sports Page provides game-in-progress statistics in real- time. Also a news window is provided for each sport with a link to a "News Page" (object) for more news. The "News Page" format includes information regarding major trades, signings and injuries. In the preferred embodiment, a scrolling window of latest news is also included.

A "Team Page" format provides a roster of a given team. Thus program 31 has several Team Page Display Objects 35c. The roster lists players by name, jersey number, position and some statistics. A "Team v. Team Page" format lists similar information as the "Team Page" format but for two teams in facing columns.

Indications of favored teams and game scores for an entire season are also provided on a "Team v. Team Page" Display Object 35c.

Player information is provided in three formats--a "Player Page" format, a "Player v. Team Page" format and "Player v. Player Page" format. Comparison of a player's statistics to his team's statistics is provided in a "Player v. Team Page" Display Object 35c. Comparison statistics of two players on different teams is provided in the "Player v. Player Page" format.

Further, some of the above sports page formats allow advertisements to be displayed at the top and/or bottom of the screen view in the preferred embodiment.

Referring back to Fig 4a, the Home Page 43 also provides a weather category. Shown on the Home Page 43 under that category is a long-range (e.g., 5-day) forecast for the user's local area and cities of interest to the user. Also that category provides storm warnings and the like for local areas and cities of interest. Upon user selection of the weather category, a Weather Page Display Object 35c enables display of weather information in one of two formats--a National Weather Page and a Regional Weather Page (Appendix I). Briefly, the "National Weather Page" format displays temperature and precipitation indications across a relevant map, along with textual descriptions. Audio forecast readings are also provided. Incorporation of a sponsorship ad is provided at the top and/or bottom of the screen view (termed "banners" in Appendix I). The "Regional Weather Page" displays (a) a regional map (e.g., state) with temperature and precipitation indications, (b) a graphical forecast (e.g., high and low temperatures and sun/cloudy, rain or snow predictions for the next several days), and (c) a detailed forecast with tabular and textual descriptions. Also the Regional Weather Page provides weather warnings

and advertisements at the bottom of the screen view in the preferred embodiment.

Referring back to the Home Page 43 of Fig. 4a, also included is a Travel Category. Data/information displayed in that category include travel and other ticket purchases of a user within an approaching date and specials advertised in areas of interest to the user. Upon user selection of the Travel Schedule Category of the Home Page 43, a Travel Page Display Object 35c enables display of a Travel Options Page (screen view).

The format of a "Travel Options Page" of the preferred embodiment is detailed in Appendix I. Preferably, there is one Travel Options Page for each of different cities. Briefly, for each Travel Options Page Display Object 35c there are three data parts. A first part is a table of transportation options, including departure, arrival and reservation information for airlines, buses, boats and trains. The second part is hotel information in a given destination (subject city). Preferably this information is in tabular form. The third data part of a Travel Options Page Display Object 35c is information regarding rental car options. Further the Travel Options Page format allows an advertisement to be displayed at the top of the screen view and at the end of a Travel Options Page.

Referring back to Home Page 43, Fig. 4a, the Directory category provides phone numbers typically called by a user. The supporting Directory Page format for this category is a table of names and corresponding mailing addresses (i.e., street, city, state, zip code), telephone and facsimile numbers, E-mail address and URL (universal resource locator). Preferably for those names with an E-mail address, the indicated name functions as a screen menu-selection using hyperlink techniques.

The "Messages" category of the Home Page 43 includes information relating to personals advertisements, classified advertisements and real estate advertisements. Upon user selection of this category, a search is initiated with user provided parameters. An appropriate Page Display Object 35c enables display of the results of the search using a "Personals Page", "Classifieds Page" and/or "Real Estate Page" format outlined in Appendix I. Briefly, included in a Personals Page/screen view is geographic, demographic and life style information. Preferably, sponsor provided advertisements are able to be inserted at the top of the screen view and at the end (i.e., after) a Personals Page screen view.

The format of a "Classifieds Page" includes accommodations of sponsor provided advertisements (e.g., at a beginning screen view and/or end screen view of the Classifieds Page screen view). The "Classified Page" format also includes indications of the requested item, make/model/year, price and a description of the subject item.

Each Real Estate Page follows one of three formats--a "Citywide Listings Page", "Selected Listings Page" and "Individual Listings Page" detailed in Appendix I. Briefly, the "Citywide Listings Page" format provides a table of real estate properties indicating address, price, square footage, etc. Also provided is beginning screen view and end screen view advertisement ability. The "Selected Listings Page" format provides a table of user selected properties/listings, with more details than the "Citywide Listings Page" format. For example, number of rooms, heat type, parking, yard/deck and the like are indicated in the table. Advertisement ability across the top and bottom of the screen view is also indicated by the "Selected Listings Page" format. The "Individual Listings Page" format includes the details of the "Selected Listings Page" with added textual

description, photo, city information and contact information. Advertisements at the beginning and end of the page/screen view are enabled by the "Individual Listings Page" format.

In the preferred embodiment, there is also a Media Schedule Object and respective screen view, accessible through the Home Page 43 of Fig. 4a. The format of the Media Schedule Page includes three tables of information--one table for television listings, one for film listings and one for live performance listings as illustrated in Appendix I. The television table lists for each program (show): the channel airing the program, start and end times, and other related information (e.g., rating, rerun, etc.) For each film, the film table lists, among other information, cinema where playing, show times, length in time, rating and indication of type of film. The live performance table includes symphony and theater performance schedules (show times) and place/theater.

In the preferred embodiment, program 31 displays user generated messages and system generated notices (or warnings) to the end user in addition to the foregoing "Pages"/screen views of category information. Fig. 4b illustrates the preferred Message/Notice Object 45 screen view format. In the case of one user sending a message to another user through program 31, the displayed message includes indications of the sending and intended receiving users along with an identifier, subject and message, among other indicia. Attachments or additional information are enabled through a page reference (Page ID) and/or link indication. If the recipient selects (by a click of a mouse) the page reference or link indication, program 31 generates a screen view (i.e., Page Display Object 35c) displaying the additional information. Further messages are transmitted through E-mail or internally/local to program 31.

In the case of notices and warnings, program 31 initiates and transmits these. An intended receiver, notice/warning identifier, message, page ID and/or additional information link are included, similar to those described above for user-to-user messages, among other indicia as illustrated in Fig. 4b. Program 31 transmits notices and warnings both internally during execution/ operation of program 31 and through E-mail.

In either case (user generated message or system notice/warning), advertisements are allowed to be integrated. To accomplish this, the "Message/Notice Page" format 45 indicates an advertisement package ID (explained below).

In addition to the features of the Home Page 43 illustrated in Figs. 4a and 4b and discussed above, the preferred embodiment provides user customization in the following ways. When a user is traveling away from the computers that he normally logs on through (i.e., home and/or office), program 31 enables the user to customize the initial screen view (i.e., Home Page 43). This is accomplished using the City Pages Objects outlined in Appendix II. In particular, an initial City Page screen view provides user access to travel options, media/cultural event schedules, Corporation Information, Weather and Directory information, all with respect to a specific city (e.g., destination cities in a business trip). To that end, from the City Page screen view, a Travel Options Page and corresponding object (from Appendix I) may be generated for the user's current town location and/or home town. Also, the City Page is an object (like Media Schedule Page Object in Appendix I) having a table listing media and cultural events, locations/channels of the same, and begin and ending dates and times, among other brief information.

From the City Page, as with the Home Page 43, a user is also able to obtain information on specific local companies utilizing Financial Page Objects

(Appendix I). Preferably a Company Page Object is utilized. Thus, corporate information is presented in a table listing company name, and indications of industry, revenues and contact information (street address, telephone/facsimile numbers and E-mail address).

Information about the local weather as accessed from the City Page is preferably presented in a graphical five-day forecast format, similar to that described for the Regional Weather Page Object in Appendix I. Lastly, the City Page provides a Directory of numbers in the subject city which the user has previously accessed and hence are probably meaningful/useful to the user while staying in that city. Each entry in the Directory includes a name, address, telephone/facsimile number, and E-mail address. Also in the preferred embodiment, indications of changes of address are provided in the Directory.

In addition, program 31 enables user customization of content and format of screen views for each category of information. That is, for each of the Home Page 43 and City Page categories (financial information, sports, weather, travel, telephone directory, personals and classifieds), the user is able to request structured data, preformatted data packages and/or value-added analyses from program 31. Thus if a user provides certain data and an indication of desired form of analyses (ranging from a numeric indication to a simple yes/no indication), program 31 provides prepared analytical views for the user selected data in the subject category. Alternatively, program 31 provides prepared profiles to assist users in selecting data. In response to a user providing a simple analytical statement/request, program 31 responds with data that fits that request. For example, if the user requests college stocks, program 31 suggests some. Also direct user selection of category items and display format is enabled through this feature.

With respect to each of the Home Page 43 and City Pages categories, the foregoing user customizations are further described in Appendix III.

Lastly, program 31 enables user customization of Home Page 43. To that end, upon a user logging in (subsequent to a first time) to program 31, one category at a time is addressed to define a default. In subsequent uses of program 31, data appears in order of most frequently selected categories of the user, unless the user specifies otherwise. Also, categories that a user selects to view further which are not on his Home Page are added with three options: customize, remove from first page, or move to a user-specified xyz position. Also program 31 defaults to the current date information only, unless otherwise designated by the user.

Referring back to Fig. 3a, a set of Sponsor Objects 33 stores sponsor provided information, including advertisements desired to be displayed and details regarding the same. Figs. 5a-5d illustrate the set of Sponsor Objects 33, referred to as Sponsor Object 33a, Ad Package Objects 33b, Ad Series Objects 33c, and Ad Objects 33d in the preferred embodiment and detailed next.

For each sponsor (or advertiser), a corresponding Sponsor Object 33a (Fig. 5a) stores in a table (or sponsor directory) the company name, numeric identification unique to that sponsor, user contact information and program 31 administrator contact information. Also Sponsor Object 33a records an indication of the demographic profile of the sponsor company itself in order to advertise to the sponsor company user as is appropriate. Further, Sponsor Object 33a indicates standardized report configurations (display preferences, etc.) for that sponsor.

Each sponsor has one or more ad packages maintained by respective Ad Package Objects 33b of the sponsor. In

each Ad Package Object 33b (Fig. 5b) there is indicated the sponsor ID, start and end dates and times, and pricing of the ad packages. The pricing may be dependent on the number of times the ad is viewed by users (i.e., a "hit"), number of times a user selects to view more information from the ad (i.e., a "click through") and/or the number of times an actual order is generated. Pricing by the number of hits and number of click throughs by exact numbers or maximum numbers is indicated in the Ad Package Object 33b. Thus Ad Package Objects 33b serve as billing entities for the program 31 administrator. Also Ad Package Object 33b records the number of hits and click throughs as tracked/monitored during user operation of program 31.

Specific to desired ads, each sponsor has one or more Ad Series Objects 33c (Fig. 5c). An Ad Series Object 33c (Fig. 5c) provides an indication of whether a given advertisement is singly or serially displayed, the category of the information, and the demographic group pre-requested by the sponsor to be shown that advertisement. In a preferred embodiment, the sponsor specifies in Ad Series Object 33c the required and/or preferred psychographic and/or demographic criteria and relative importance (e.g., weight) with respect to each criterion. Further, the sponsor specifies in Ad Series Object 33c a minimum total weight of criteria to be met by a user to qualify the user to view the ad series. Also Ad Series Object 33c includes a reference to an Ad Package Object 33b (via an ad package identification), the hour of the day in which the ad/ad series is to start and end, the days of the week on which the ad/ad series is to be displayed, and the beginning and ending dates and times of the ad/ad series. Also for serially displayed advertisements, Ad Series Object 33c indicates the maximum number of views in a series to be displayed per user and per user per day.

Each ad forms a corresponding Ad Object 33d as illustrated in Fig. 5d. For a given advertisement, Ad Object 33d indicates to which series the advertisement belongs. To effectuate this, the Ad Object 33d indicates a series ID which references an Ad Series Object 33c, and indicates a series sequence (i.e., the ordering of the ads in a series). Ad Object 33d also includes the starting and ending time for display of the ad each day. Ad Object 33d also provides references to graphic, sound, and multimedia portions of an advertisement. A text-only format of an advertisement is used for users receiving messages on their own E-mail service or on a text-only browser (e.g., Links systems for VAX/VMS operating systems) rather than through the messaging feature of program 31.

Another part of the Sponsor Objects 33a-d is a computer subroutine 41 (Fig. 3a) which provides performance reporting. This enables the sponsors of the advertisements to obtain reports on successful use of the advertisements. The types of reports provided in the preferred embodiment of program 31 are outlined in Appendix IV. In that Appendix, "HTs" means hits and "CTs" means click throughs.

Briefly, an Overview Report provides a review by ad package. The number of hits and number of click throughs purchased and achieved are indicated among the cost of the package and date specified by the ad package.

A Detailed Package Report provides information on individual ad packages, including showing the ads included in the package with video and audio portions intact. The demographic profiling requested and demographic breakdown of success with respect to a control group are also provided in the Detailed Package Report. Also the number of hits and click throughs purchased and achieved are designated in the Detailed Package Report.

In the Demographic Response Rates Report, all ad packages of a sponsor or selected ones are compared. In particular, the ad success by the sponsor-targeted demographic groups is compared. Further the reporting subroutine 41 of program 31 calculates a regression on the targeted demographic groups for the ads, and the results of the regression calculation are used to suggest other demographic characteristics that are important factors in the number of click throughs and/or number of purchases. The advertiser may also run a complete regression report for all or certain ad packages.

A Psychographic Profiling Report is similar to the Demographic Response Report except a psychographic profile is used instead of a demographic profile. The reporting subroutine 41 makes regression calculations, and results of the calculations enable program 31 to suggest other psychographic characteristics that are important factors in the click throughs and/or purchases of the ads for a given sponsor.

Other report formats include a U.S. or world mapping to show user density of program 31 versus a sponsor's click through or purchase density. Traditional regression reporting is also enabled. Custom reports which allow the sponsor to select ad packages to be analyzed and variables to consider are also enabled by reporting subroutine 41.

Use and operation of the preferred embodiment of the present invention is as follows. The following is for purposes of illustration and not limitation.

Stored locally on a user's PC is a cookie (technology by Digital Equipment Corp.) for identifying the user and his preferences. The user logs onto the Internet 29 and enters the URL or Website address of program 31 which initializes main routine 39. The URL request is received by Web server 27 which in turn transmits (a) a login advertisement screen view (i.e.,

from Page Oobjects 35a,b,c and Ad Package Object 33b) and (b) a request for a cookie that indicates whether this is a first time user. When no cookie is present, the main routine 39 transmits through server 27 the standard introductory screen view page (Home Page 43, Fig. 4a).

Preferably the Home Page 43 (Fig. 4a) is an HTML (HyperText) document generated through the set of Page Objects 35a,b,c. The Home Page 43 describes to new users the data available at the program 31 Website and allows existing users to log in. The Home Page 43 is formed of several graphical and text documents in the HTML and Java formats. For example, behind the "stock data" menu selection a Stock Exchange ticker flashes, and behind the "weather" option, a display of clouds swirling over San Francisco and then sunshine over Washington, D.C. is shown. A clip of a newly released movie plays behind the "Media Schedule" option, and sports scores scroll behind the "Sports" option. At the bottom of the screen view are login fields and prompts.

For a new user, the Home Page 43 effectively requests a user name and password. In response to the user-provided data, main routine 39 immediately builds a cookie if possible. Included in the newly built cookie is a unique user identification code (preferably numeric), time and date of login, and computer identification number to distinguish between home and work logins. Main routine 39/server 27 transmits the created cookie to the user's PC for storage and future use.

Upon the new user selecting a displayed option (by moving the cursor to the desired option and depressing/clicking the mouse button), a request is generated and sent to main routine 39/server 27. In response, program 31 obtains a screen view corresponding to the selection as generated through Page Objects

35a,b,c. Main routine 39 transmits the screen view for display to the user.

Program 31 also creates a new User Object 37a, User Computer Object 37b, User Interface Object 37c, User Session Object 37d, User Action History Object 37e and User Viewing History Object 37f for the new user. User Object 37a records the user-provided name and password used to create the cookie. User Session Object 37d records the login time. User Action History Object 37e records the selection activity of the user. The User Viewing History Object 37f also registers the open and leave times for the initial login advertisement screen view and notes what elements were displayed at that time. Also the Ad Package Object 33b responsible for the initial login advertisement screen view records a "hit" by the new user.

Say for example, the new user selected (i.e., "clicked on") the "Stock Data" option from the Home Page. Program 31 responds by displaying a screen view featuring the exchange prices from various global exchanges. Main routine 39 also enables a banner to appear at the top of the screen reading (for example) "Brought to you by Dean Witter". The user is able to select/click on this banner to effectively request more Dean Witter information from program 31. To accomplish this, the screen view contains a hyperlink formed of the URL for Dean Witter information on the Internet, and program 31 would list the new user as the requester and the current screen view as the page from which he made the request.

In the example, the exchange prices screen view also displays two options: "Quick quotation" and "Build a Portfolio". Say the user selects the former and enters a stock symbol. The screen view also prompts the user to a directory of symbols for use as needed. Near the lower portion of the screen view, there is displayed an area for the user to enter a new stock symbol and an

option "button" to effect addition of the corresponding company to the user's portfolio. Also displayed are other selection options as outlined in the Financial Pages formats of Appendix I. Further, main routine 39 displays advertisements in the screen view along the top, bottom and/or sides of the screen as supported by the Page Objects 35a,b,c and Ad Package Objects 33b.

In response to the user's selection and entered stock symbol, a long URL is generated and received by server 27. While no page currently exists at the requested address (the URL), program 31 generates one in response. Specifically, main routine 39 queries the Financial Page Object 35a,b,c (Appendix I) and requests the standard "quick quotation". The Page Objects 35a,b,c assemble the data, format it into a table and return it to Web server 27. Sources of the data include on-line securities information from S & P Comstock and information stored by Page Data Objects 35b.

Simultaneously main routine 39 updates User Action History Object 37e to reflect the user's selection of the "quick quotation" option. User Viewing History Object 37f notes that the user selected an option which had stock data present in blue, for example, with moving graphical elements.

Also main routine 39 selects and includes advertisements on the newly assembled page/screen view at server 27. Main routine 39 accomplishes that by (i) determining, for each Ad Package Object 33b, if the advertisements there are appropriate for the user and (ii) ranking all appropriate advertisements. To determine appropriateness, for each ad placed by a sponsor, the sponsor weights demographic and psychographic criteria by importance and identifies which terms are required. The sponsor then gives a minimum total weight required for a user to see the ad series. The weighted criteria and indications of

required terms and minimum total weight are recorded in Ad Series Objects 33c (Fig. 5c).

To rank the advertisements determined to be appropriate, main routine 39 calculates

$$Rank = \left(\frac{\#hits\,purchased}{\#hits\,achieved}\right)\left(\frac{\#clickthrus\,purchased}{\#clickthrus\,achieved}\right)\frac{1}{t}\,cost(1-$$

where #hits and #clickthrus (i.e. number of hits and number of click throughs) purchased and achieved are stored in Ad Package Objects 33b;

t is time remaining and equals end date/time minus current date/time (from Ad Package Objects 33b); and

D is a percentage discount of the cost of the ad package, if the ad package is not completed i.e., number of purchased hits and click throughs is not met.

In the preferred embodiment, program 31 automates weighting of criteria and in real time adjusts the intended audience profile of advertisements. To that end, program 31 tracks demographic and/or psychographic criteria of users who view ("hit") and/or select (i.e., "click through") advertisements. Then program 31 performs a traditional regression analysis of the tracked criteria, which results in (i) null and alternative hypothesis testing to determine significance (T-test or χ^2 test) of criteria/variables, and in (ii) squared correlation and squared correlation testing (R^2) to determine the weight of each criteria. See D. Freeman, R. Pisani and R. Purves, "Statistics", publishers W.W. Norten & Co., NY 1978 pages 439-444; and Murray Speigel, "Theory and Problems of Statistics," McGraw Hill, NY 1961 pages 270-273. Program 31 uses the T-score (of the T-test) to weight demographic and/or psychographic criteria and to effectively adjust the minimum total weight recorded in the Ad Series Object 33c (Fig. 5c). Program 31 continually performs the foregoing so as to maximize/ optimize success of advertisements displayed through server 27.

Referring back to the example, server 27 transmits the generated screen view (i.e., "Quick Quotation Page" of user specified company with user appropriate ads) for display to the user. Next program 31 registers the user's activity with the User Interface Object 37c, User Session Object 37d, and User Viewing History Object 37f corresponding to that user. Also User Viewing History Object 37f records open and leave times for the first screen view ("Quick Quotation Page" of user-specified company) and notes indications of what elements were displayed in that view to the user. Lastly, an additional "hit" is recorded in the Ad Package Object 33b for the advertisements displayed to the user.

When the user requests to add the displayed stock to his portfolio, main routine 39 queries the Financial Page Objects 35a,b,c as before and returns (transmits for display) a Stock Page (Appendix I) including an indication of the stock/company the user requested. The User Interface Object 37c of the user records the new portfolio information. Where the user provides/enters purchase price to program 31, the displayed Stock Pages includes a tally of the user's gains and losses.

The user next selects the Weather category. In response, the set of pertinent User Objects 37 register the user's activities (i.e., what he "clicked on") and record indications of the screen view he was viewing as described before. Main routine 39 prompts the user for his zip code or the name of the city for which he wants weather information. In response to the user specified city, the User Object 37a for the user records an indication of that city as a city of interest to the user. Further, main program 39 generates a Weather Page Object (Appendix I) through Page Objects 35a,b,c to display a weather report for the subject city. This is accomplished in a similar manner to that described above for a Stock Page, but the source of data is one or more on-line services such as Weather Service Corp.,

AcuWeather, and WSI, for example. As described above, the User Interface Object 37c, User Session Object 37d, User Viewing History Object 37f, and Weather Page Object 35 record (a) open and leave times of the weather screen view, (b) indications of what elements were displayed in that view, and (c) indications of what weather elements the user liked to view in his weather page, including national radar maps and 5-day forecasts.

Say the user now logs out. Program 31 notes the total usage time and adds it to the user's usage log. When the user subsequently logs on, Web server 27 locates his cookie, and main routine 39 queries the User Object 37a, User Computer Object 37b and User Interface Object 37c of the user to identify who he is and what his preferences are. In turn, main routine 39 queries the Financial and Weather Page objects of the user and returns with data (screen views) of that last session. Using this data, program 31 automatically generates a Home Page 43 tailored to the user, i.e., lists his portfolio and the weather in his last specified city.

Also the Home Page 43 displays an option to "click here for weather in other areas". Upon the user doing so and entering a home zip code, program 31 records that information in the User Action History Object 37e and User Object 37a (home zip code field). Program 31 also generates a Weather Page/Screen View for the designated zip code area using the Page Objects 35a,b,c as described above.

Next, say the user selects and uses from the Home Page 43 (i) the Directory to look up a business partner in Detroit, and (ii) the Travel option to look up flight schedules. Screen views of telephone directory pages and travel options/tables are generated and displayed using the Page Objects 35 and Ad Package Objects 33b as described before. That is, the Page Objects 35a,b,c (i) assemble the data from a pertinent agate source whose URL is passed in the initial request/option selection,

(ii) format the data into tables, and (iii) return it to server 27. Meanwhile the Ad Objects 33b,c,d determine and return appropriate advertisements to be integrated into the screen view/page. Moreover, the user's User Object 37a records Detroit as another city of interest, and the user's Directory Page Object 35 records his partner's telephone number. Finally, the user's User Interface Object 37c records his travel plans (as inferred from the user's activity with the displayed Travel Page/Screen View). User Interface Object 37c also sets a flag in program 31 to send the user an appropriate weather forecast the day before he travels.

Preferably, the sources of travel and directory data are: services which compile the subject data for use by program 31 administer, satellite sources, or FM transmission sources. One or more such sources are employed as described above for the Stock Page and Weather page/screen views. Likewise, for Sports data, program 31 utilizes Sports Team Analysis and Tracking Systems Inc., for example. For Classified, Personals and Real Estate data, a collection of on-line services is employed. Alternatively, such data is entered into respective objects by a program 31 administrator. Other data sources or a combination of said sources are suitable.

After some time, i.e., several sessions with program 31, the user's User Interface Object 37c holds indications of his categories of interest, including specific items of interest in each category of information, and his display/format preferences (colors, design, layout, etc.). Based on these recorded details, program 31 constantly and automatically tailors screen views (content and presentation) and advertisement selection (subject matter and presentation) for the user. As such, each time the user logs on, program 31 features items that are more interesting and appealing to him (at least potentially so). When a user selects

(i.e., "clicks on") an advertisement, the corresponding Ad Package Object 33b records a "click through". This affects the ranking and criteria weighting calculations (discussed above) and further refines the terms of elements to be displayed/presented to a user. Thus the present invention provides a means and method for continually refining the target profile for advertisements.

The messages/notices and warnings feature 45 (Fig. 4b) of program 31 enables users to request warnings for all data categories. In the example, say the user requested that a warning be sent to him for changes in stock price of a certain company. In turn, the User Interface Object 37c records the user specified threshold (e.g., change in price per share) and his E-mail address where he can be reached. When the stock data source issues a message that meets the threshold, the user's Warnings/Notices Object 45 (Fig. 4b) sends an appropriate warning. His Warnings/Notices Object 45 also records a "posting date" of the warning. Upon logging onto his Internet mail, the user sees incoming mail (the warning generated and sent from program 31). Upon logging into program 31, the user is presented with the usual Home Page (tailored to that user) but with an indication of an outstanding warning. If the user selects the "warning" option, program 31 employs a "link" (e.g., HyperText technology) to display that part of his stock portfolio which is pertinent to the warning. The Warnings/Notice Object 45 in turn records the user's read date and time.

Similarly, user-to-user messages and/or notices (e.g., special events or new information available through program 31) are provided to a user. User Viewing History Objects 37f and other User Objects 37 may be searched by program administrators to find users to target notices to, depending on category of information and presentation details. For example, if

there is a new satellite picture of a hurricane off the southeast coast, a program administrator could search the User Viewing History Objects 37f to find all users who have in the past viewed weather maps of the southeast coast. The resulting indicated users can then be sent a notice (via their respective Message/Warnings Object 45) saying "Check out hurricane X off the coast of Florida (This message brought to you by White Rain hairspray)", for example.

In the case of a sponsor-user logging on, he may browse through the agate information (categories on the Home Page) and advertisements as described above for an end user, but more importantly he is able to place ads and obtain performance reports. This is accomplished as follows. When a company (sponsor) opens an account with the program administer, the program administrator obtains sponsor information and forms a corresponding Sponsor Object 33a. Advertising information and desired ads of the sponsor are recorded in respective objects. In particular, package information (number of click throughs purchased, pricing and timing details) are recorded in Ad Package Object 33b. Demographic targets are entered in Ad Series Object 33c, and the ad content and information are stored in the Ad Objects 33d.

As discussed above, sponsors have the ability to place ads according to demographic profile. To do so, advertisers/sponsors complete a template (preferably in the Ad Series Objects 33c) which allows them to list certain criteria as required, and to weight other criteria by importance. To ensure ads are shown to the appropriate target users, the sponsor then selects a minimum total weight which a user's demographic/psychographic profile must achieve before the advertisement is shown to the user.

To ensure that sponsors achieve the optimal result from the ads they place, program 31 combines regression analysis with the above weighting technique to achieve

real-time, automatic optimization as discussed previously. Under this auto-targeting system, an ad package is shown to general users. After a large number (e.g., 10,000) hits, program 31 runs a regression on a subject Ad Package Object 33b to see what characteristics are important, and who (type of user profile) the ad appeals to most. Program 31 then automatically enters weighting information based on that regression to create a targeted system and runs the advertisement (Ad Package Object 33b) again in front of this new targeted group. Program 31 then runs a regression every 10,000 hits, for example, including a group of 500 general people as a control, and adjusts the weighting. This continues until the Ad Package is exhausted (i.e., the number of hits and click throughs are achieved).

Subsequently when the sponsor-user logs on, the Web server 27 (using cookies if available) identifies the sponsor-user with a user ID stored in the Sponsor Object 33a (Fig. 5a). Preferably, separate cookies are used to identify the user's personal login apart from that of the user as an agent of a sponsor-company. Also program 31 begins recording page information for the sponsor, and begins building a demographic and psychographic profile and usage history upon the sponsor-user entering the system.

Using page Objects 35, program 31 displays an initial screen view and prompts the user for a user name and password. The sponsor-user enters the Company's user name and their password. In response, main routine 39 checks the set of Sponsor Objects 33 and determines this to be the first "visit" since the sponsor placed a new ad. In turn main routine 39 omits displaying the main menu (for sponsor-user) having options to place a new ad, check existing ads, or go to Home Page. Instead main routine 39 uses Page Objects 35 and displays the existing ads section which offers a "reporting" option.

Upon the sponsor-user selecting the "reporting" option, main routine 39 lists in a screen view, the standard reports from the corresponding Sponsor Object 33a and an option to generate a custom report.

In response to the sponsor's 33 request for (i.e., selection of) a particular report, main routine 39 calls reporting subroutine 41 which queries Sponsor Object 33a, Ad Package Object 33b, Ad Series Objects 33c and Ads Objects 33d of the sponsor for details. For example, demographic elements, number of click throughs purchased, number achieved to date, number of hits, and time remaining in an advertisement are retrieved. Program 31 then checks the usage logs and retrieves the profile of users who selected the sponsor's advertisement, using the User Objects 37a. The program 31 then generates a report using this data and uses standard statistical regression techniques to find correlation between success and different demographic and/or usage information, and reports those as well. For example, a report comprises several defined elements, including overall success of the advertisement, breakdown by requested demographic elements, comparison of target market with control group, number of click through requested versus number achieved to date, as well as the time remaining in an advertisement. Finally, program 31 completes a regression analysis using data stored in Ad Package Objects 33b and User Objects 37, and suggests other demographic groups which a sponsor might want to consider for a subsequent ad.

When displayed to the sponsor-user, reports may also have ads integrated therein, similar to pages/screen views displayed to users discussed previously. In the example, say another company previously placed an ad targeting advertisers in the telecommunications industry. When the sponsor-user of the example logs in, the server 27 queries the

corresponding Sponsor Object 33a for the company's SIC code and industry description. Recognizing a match, program 31 places the other company's ad on the report screen view displayed to the sponsor-user. If the sponsor-user clicks on the ad, program 31 records the hit for the other company's advertisement, just as it would with any other end user. As such, program 31 tracks advertiser usage as user information and develops demographic profiles for advertisers. This data is stored in the sponsor's Users Objects 33a (Fig. 5a). When the sponsor-user of the example decides to create a second package, the sponsor-user clicks on a "request an ad package" option and completes a form detailing the package (number of hits/click throughs requested, profiling, etc.). This time however the sponsor-user decides not to identify a target market for this ad. Impressed by the system's regression information, the sponsor-user decides instead to choose "auto target" and allow program 31 to make the most efficient use of the new ad. Graphics of the new ad are "pasted" onto the form and submitted to server 27.

In response, program 31 creates a new Ad Package Object 33b and links it to the company's existing Sponsor Object 33a. From the data entered into the form, main routine 39 completes the corresponding Ad Package Object 33b, Ad Series Object 33c and Ad Object 33d. In turn, program 31 displays a price quote for running the ad, and the sponsor-user clicks on the "accept" button. This advertisement package becomes available as soon as the sponsor-user has clicked on the "approved" button.

Subsequent login to program 31 completes a similar query to the one above, this time checking for both of the sponsor's advertisements. Reporting subroutine 41 generates a report listing the successes of the ads in two columns of a table. To accomplish this, subroutine

41 uses Sponsor Object 33a, Ad Package, Ad Series and Ad Objects 33b, 33c and 33d.

Say, for example, the sponsor-user decides to follow the success of this new ad and creates a customized report to do so. To build the report, the sponsor-user clicks on the "build custom report" option. Here subroutine 41 sends a report template to the sponsor-user. The sponsor-user selects the new ad series, which promoted a second telephone line for example, and requests a variety of reporting elements. The sponsor-user then names the report "Susan 1". The completed report information is stored in the Advertising Reporting Features Object (Appendix IV). The name of this report will now appear on the report options list of the sponsor when a sponsor-user subsequently logs on.

Program 31 automatically breaks down "auto-targeting" advertisements by time, to demonstrate the increasing success of the ad. The system prepares any requested report with this time breakdown, such that a sponsor can see that the advertisement is becoming more and more successful the longer it runs.

In the preferred embodiment, program 31 allows sponsors to sort groups of users by demographics, to compare success rates of different user groups, advertisements, advertisement aspects, etc. The above described methods employed by subroutine 41 and program 31 provide graphical reports when appropriate and format report data in a manner which is easily printable or transportable to presentations software. For example, in the preferred embodiment, program 31 makes all reports downloadable as an Adobe Acrobat file. Other formats are also suitable.

In order to achieve rapid and direct benefits from the detailed reporting of program 31, program 31 allows the sponsor to enter new advertising contracts on line. If a sponsor recognizes that, for example, 25-35 year-

old women tend to purchase frequently and respond to their still, forest green colored advertisements most often, program 31 allows sponsors to place that type of ad in front of the subject target market segment during a reporting cycle. Thus, program 31 enables updating of the Sponsor and Ad Objects 33 during a reporting cycle to accommodate the foregoing.

With respect to reporting, if the reports of program 31 show that customers respond to still advertisements more often than moving ones, bright colors more often than darker ones, graphics rather than text, large text rather than small, detailed text or square advertisements rather than bar style ones, such is relayed to the sponsors/ advertisers.

To achieve the foregoing analysis, program 31 classifies aspects of each advertisement (see Ad Objects 33d, Fig. 5d). In a preferred embodiment, such classification is automatically provided by a subroutine of main routine 39. In turn, this allows direct user behavior analysis and psychographic profiling.

Equivalents

While the invention has been particularly shown and described with reference to a preferred embodiment thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims.

For example, the term "page" is used synonymously with screen view.

In the foregoing discussed example, description of generation of weather, stock, travel and directory pages is provided. Page/screen view and supporting objects in other categories of information are similarly generated.

The use of the term "program administer" singularly or in plural is intended to refer to people who operate

the Web site of program 31, or the functional equivalent.

Further, other features, such as the following, may be implemented in program 31 with respect to a respective category of interest.

Stock & Business Data

Perhaps the greatest value added by this section is portfolio accounting. By letting users enter stocks, purchase price, commission, and number of shares, program 31 allows users to track their investments more successfully. In addition to the portfolio, program 31 may provide users an option to create a list of stocks that they follow (i.e., without any of the purchase information), simply so they can separate what they own from what they might buy. Both of these lists are downloadable into Quicken, MS Money, or generic, tab-delineated spreadsheets.

As described above, however, program 31 allows users to be able to build portfolios, initially without registering, etc. Thus it is important to allow users to view detailed stock information for individual companies or groups of companies without building a portfolio. An alternative is displaying in Financial Pages several blanks in which users can place company symbols, with check boxes for the options of "Add these to my Portfolio" or "Add these to my 'Follow these' list".

Company data will also be a major competitive advantage of program 31. Program 31 allows users to examine company data, compare several companies, or compare an SIC-code group, all with a few clicks. Example: Joe Cool wants to compare Apple, IBM, and Compaq. Joe could enter these three into the same blanks used for stock data and, instead of stock data, select corporate information. Joe would receive from program 31 the balance sheets, income statements, etc.,

all in comparable columns. Joe could also switch to CAGR numbers (Compound Annual Growth Rate, pre-processed by program 31) which allow easier comparisons. Another click (i.e., command/selection) and Joe downloads these as a spreadsheet.

Both stock and company data can also be processed through a few calculations to produce standard business ratios (i.e., price-to-earnings, etc.). Some of these can be pre-processed; some must be done in real-time as they include stock price.

Alerts: For users who are comfortable giving out their E-mail address, the program 31 will send alerts at preset stock prices for stocks in their portfolio list or their "track these" list. E-mail's will be sponsored and will correspond to the "New Items" section on a user's personal page.

Weather

Program 31 uses the weather to determine, in part, where users live and where they are going. As such, program 31 enables users to see the weather in 1, 2 or 3 places they are or would like to be. Thus, another program feature allows users to view weather from more than one place simultaneously.

Program 31 typically gives users a quick glimpse at the 5-day forecast on the login page, with additional information about their local area or others in map format, graphical images (e.g., a snowflake), and data. Weather summaries may be available (short text blurbs) for larger regions, and possibly for individual cities.

The greatest challenge here is how to locate the user. This can be done either with maps, zip codes/postal codes or by city (selectable lists which change by country). Alternatively, it is desirable to have a clickable map which allows the user to get to their location within 2 clicks. Also the system may offer a shortcut where the user can do it by postal code

(and have a global database of postal codes). If postal codes duplicate, let the user select from the possible options.

Alerts: Users will be able to request alerts of bad or good (e.g., for weekend plans) weather in their area via E-mail.

Sports Stats

The sports section probably requires the most tailored display capabilities. Users will be able to find game results (broken down by inning/quarter, etc.), league standings, individual player information (RBI, runs, At Bats, etc.) and retrieve some set of these each time they look at sports stats. This will be a natural lead-in to a rotisserie league and will support franchise sites (a good cross-link opportunity). The Web site will also include betting lines.

Initially, users will be welcomed to a site featuring a graphic that represents all of the sports that program 31 covers and the previous day and current day's results, and can select the sport that interests them most, or go immediately to a game of interest. If a sport is selected, program 31 will present teams -- or players, if the sport is an individual sport -- (organized by standing in leagues, or as is otherwise appropriate by tradition), and allows users to click-through the league or a specific team. At this level (league, team or individual) and on all subsequent levels, the system will allow the user to "track this team" or "track this player."

The next time a user logs on to sports, a screen will compile the user's information, showing all baseball teams (including win loss record, league, league standing, next game date and time), then all baseball players, etc.

Alerts: program 31 will alert users when their favorite teams are on television or coming to town.

Travel Information

Travel information will include various modes of travel, their schedules (departure/arrival times, perhaps including layovers/transfers), and, when available, costs for tickets (by class) and, if possible, ticket availability information. This is a natural lead-in to on-line bookings. Preferably, program 31 accommodates additions of new carriers and perhaps a section on hotels. Where possible, program 31 would give users the cost of a seat on that flight, and availability of seats in a specific category.

Alerts: Users will be alerted to weather in towns they are traveling to, airport closings, etc. (Weather Objects may include this.)

Telephone Directory

Users will be able to define a name (first, last), address (city, state, zip), and find all published numbers that match (limited to 100/display, but users can go through more than 1 page of 100). Entire lists can be downloaded into a tab-delimited file with name, address and phone. Users can keep a directory of most called numbers on server 27. Users will receive alerts if someone on their list is no longer listed at the old address.

Visitors to server 27 will have the ability to add E-mail information to their directory information. This will be recorded so long as they maintain the same location. If they move, they will have to re-enter their E-mail address.

Program 31 will also maintain a list of "where are they now" numbers and addresses, i.e., a list of changed addresses and telephone numbers which is searchable in a similar fashion.

Media (TV & Film) Schedules

Users will be able to find television (network and local) and film schedules by zip code. Users will also have the capability to search for a specific show or film (to see where and when it is playing) or national network/satellite channel, or theater (to see what they are playing).

These lists will feature, in bold, the names of films/shows appearing from any sponsor. Users will have the option of tracking specific channels/themes on their Main (Home) Page 43 or on an adjunct Media-Page.

Classifieds & Personals

Users will have the ability to enter classified and personal advertisements on the network. Program 31 will use the information provided to build demographic profiles when possible.

Entry should be through automatic forms and selectable lists as much as possible, to enable quick search and classification. Users should be able to browse through categories of items, or search them. Classifieds should be searchable by category, model, condition, price, seller's location, and keyword. Personals should be searchable by location, price, gender, orientation, race (if declared), age, and other categories.

To respond to a list, server 27 should allow responders to send a confidential message to a user or program 31, including his/her program identifiers, E-mail address, or telephone number. When someone who posted an advertisement/personal next logs-in, his/her Home Page 43 should contain a message reading "You have responses to your ad!" This hotlink should lead users to a page containing all responses and allowing the user to send simple messages in reply.

Entries, if not renewed, should be removed after two weeks. Users should be able to renew and remove

advertisements easily, perhaps by entering a system-provided code.

Reports

Sponsor-user requested reports are generated at the time of request as described above. A real-time report (e.g., JAVA format) would show changes as they occurred during a requested report.

APPENDIX I

Types of Financial Pages

Format 1. Stock Page

Top banner

Portfolio

Table including user-selected stocks and items listed below

Items included in a table

- Last Traded At...price
- Day/Time of last trade
- $ change
- % change
- volume
- # trades
- open
- prev. close
- bid
- ask
- day low
- day high
- 52 week low
- 52 week high
- EPS
- P/E
- Market Cap
- Beta
- Dividend
- Dividend Ex Date
- 5 year EPS growth
- Currency
- Per share purchase price
- Number of Shares purchased
- Change in individual share value
- Change in share lot value
- Total change in portfolio value

Portfolio value graph

Message Window
List of quickly moving companies/alerts
List of expert articles
Tracking List
(like portfolio, replacing purchase price with "initial tracking value")
Indices (graphed, listed or value by daily change pointer)
Dow Jones Industrial Average
NASDAQ
Other indices
Custom Ticker
Closing Banner

Format 2. Company Page
Top Banner
SIC Industry code and industry name
Stock information
Graph of change
Table compares these with 3-5 companies in similar
SIC group
Last traded at...price
Day/time of last trade
$ change
% change
volume
trades
open
prev. close
bid
ask
day low
day high
52 week low
52 week high
EPS
P/E

Market Cap
Beta
Dividend
Divident Ex Date
5 year EPS growth
Currency
Per share purchase price
Number of shares purchased (if user holds in portfolio)
Change in individual share value
Change in share lot value

Corporate information
Industry overview
Products
Officers and contact info for them
Historical balance sheet and income statement
Tables
Link to 10K/10Q

Window--News/Expert articles on that company
Closing banner

Format 3. Expert Articles Page
Top banner
Article (may include tables/links to company data)
Stock graph for companies discussed
List of previous articles (with links)
Bottom banner

Format 4. Expert Guide Page
Top banner
Survey pages
Results page
Textual description of stock page
Table of some stocks that they found to fit their description
Description of "Show me Some" stock option (see below)

Disclaimer
Bottom banner

Format 5. Show Me Some Page
Top banner
Text description of what page does
Table of stocks (generated from where the call for the page came from)
Disclaimer
Bottom banner

Types of Weather Pages

Format 1. National Weather Page
Top banner
Maps
National/Continent Weather Photos & Maps
Satellite view
Temperature changes
Precipitation map
UV index
Textual description of the fronts
Real audio from a celebrity reading his/her forecast
Bottom banner

Format 2. Regional Weather Page
Regional (state-sized regions) photos & maps
Satellite view
Temperature changes
Precipitation map
UV Index
5-day graphical forecast
high temp
low temp
precip (sunny, partly cloudy, partly sunny, mostly cloudy, cloudy, rain/snow)

Detailed 5 day forecast (table & text)
high temp
low temp
winds
wind chill
precip
UV index
textual description
Weather warnings
Bottom of the page ad

Types of Sports Pages

Format 1. Sports Page (General Sports Page)
Top of page ad
Game scores by league (user drill-down to game page)
4 pros and 2 collegiate
Standings in league
4 pros and 2 collegiate
Player standings by major category (for pros 4 and college 2)
Baseball
Football
Hockey
Basketball
News window for each sport showing recent (e.g., 2-3 days worth of news) with link to News Page for more.
Custom scores ticker

Format 2. News Page (windows will be Java scrolling including new news where possible)
Top ad
Major trades/signings
Injuries
Other news windows
Bottom ad

Format 3. Team Page
- Top ad
- Team name
- Team logo (if permission granted)
- Roster
  - Player names
  - Player numbers
  - Player position
  - Short stats list
- Bottom ad

Format 4. Team v. Team Page
- Top ad
- Table - 2 columns
  - Team names & team logos (if permission for BOTH)
  - Team rosters, with players opposite one another
  - Performance stats in competition
- Odds-makers bets on coming games
- Ticker with game scores for entire season
- Bottom ad

Format 5. Player Page
- Name
- Team name
- Position
- Stats list
  - Runs scored (season)
  - RBI
  - Batting average

Format 6. Player v. Team Page
- Top advertisement
- Player name and team name
- Player stats against this team only (table)

Odds of various events in table
Bottom ad

Format 7. Player v. Player Page
Top advertisement
Table with two columns
Player names
Relevant stats in previous matches
Odds in table

Media Schedule Page
TV Table
Show
Channel
datetime start
datetime end
rating
rerun?
Film Table
Film name
Director
primary actors (3)
theater
times
length
rating
comedy/drama/action/documentary/musical
classic/new film
Theater/Opera/Symphony Table
Theater
Show title
Show times
Director

Travel Options Page (by City)
Advertisement (Top)
Table with travel options

- Transport type
  - airline
  - bus
  - boat
  - train
- Schedule
  - Departure
    - city
    - time
  - Stops (could be multiple)
    - city
    - arrival time
    - departure time
  - Arrival
    - city
    - time
  - Reservation Information
    - seats available
    - cost/ticket
    - restrictions
    - requirements
      - passport?
      - visa
      - photo ID
    - number to call for reservation
  - Table with room and board options in destination
    - Hotels
      - name
      - address
    - price/night
      - weekday
      - weekend
    - max # in room
    - bedding
      - king (number?)
      - queen (number?)

single (number?)
cot (number?)
television
cable TV
pool
a/c
number to call with reservation
Rental car options
Dealers
name
address
telephone
Car options (for days available)
make/model
price/day
End of page ad

Personals Page (result of search by categories)
Top of Page Ad
Table comprising search results
geographic
city
demographic
gender
age
income bracket
occupation
lifestyle
language
smoker
orientation
lifestyle (vegetarian)
race
drinker
marital status
music

weight
height
Ad text
End of page ad

Classifieds Page
Beginning of page ad
Response from search
Item name
Make
Model
Price
Year
Available date
Description
End of page ad

Real Estate Pages
Format 1. Citywide Listings Page
Beginning of page ad
Table showing
address
price
dwelling type
square footage
price/sq.foot
End of page ad
Format 2. Selected Listings Page
Top Ad
Table (includes only those listings selected by the user)

Table including
address
price
square footage
price/sq.foot

dwelling type
eat-in-kitchen (EIK)?
number of bedrooms
number of baths
parking?
number of off street
number of garage
yard size (if any)
deck?
pool?
construction type (brick, wood, etc.)
heat type
central air?
available date
Bottom ad

Format 3. Individual Listings Page
Beginning of Page Ad
Table including
address
price
square footage
price/sq. foot
dwelling type
eat-in-kitchen (EIK)?
number of bedrooms
number of baths
parking?
number of off street
number of garage
yard size (if any)
deck?
pool?
construction type (brick, wood, etc.)
heat type

central air?
available date
Textual Description
Contact information for house
Owner/agent name
telephone
E-mail/program 31 messaging
Photo (if paid advertisement)
Floor plan (if paid advertisement)
Map of city with house marked (using 9 digit zip)
End of page ad

APPENDIX II

City Pages

Travel Options from User's Hometown

See Travel Options Page above

Media/Cultural Event Schedules in Table

Name of event/show

location/channel

datetime begins

datetime ends

ticket cost (if any)

Corporate Information for Local Companies (Table)

Name

Industry

Revenues

Contact Info

street address

city

state

zip

telephone

fax

E-mail

Weather

graphical 5-day forecast for city

Directory (numbers in city user has accessed before)

Name

Address

street

city

state

zip

Telephone

fax

E-mail

Notification of changes in address list

APPENDIX III

User Customized Categories

Financial Information

Data from two primary sources

S&P Comstock from variety of exchanges. (Note some of these items may not be available.)

- last traded at
- day/time of last trade
- $ change
- % change
- volume
- # trades
- open
- prev. close
- bid
- ask
- day low
- day high
- 52 week low
- 52 week high
- EPS
- P/E
- Market cap
- beta
- Dividend and ex
- 5 year EPS growth
- currency

Ticker-company translator

EDGAR

- revenues
- earnings
- product descriptions

Preformatted data analysis for user profiles

- bid
- ask

last
$ change
52 wk high
52 wk low
p/e
Portfolio view - user selected stocks
current information
tabular (selected attributes)
total value if user includes # shares
changed value if user includes purchase price;
allow multiple purchases of same stock
for several different purchases by doing
Quicken-like pulldown entry for several
lots of same stock
user formatted output
value-added analysis tools and data
Prepared analytical views for user
selected data. Includes customized
info...here's my data and here are some
forms of analysis. Options range from
numeric to "Thumbs-up, Thumbs down".
What info do you want
e.g., Dorfman's ratings (for
every stock; based on
designated user goals and
profiles)
trip next year
college
retirement
what items do you like?
e.g., Beardstown ladies
What businesses are doing well
in your neighborhoods? What
shoes are your kids wearing?
Prepared profiles to assist users in selecting
data. I give you my easy walk-through

analysis and you give me the data that fits it (I want college stocks and you suggest them).
Like TurboTax software
ADD info from here to user profile
Direct User Selection of categories and display (like TERMS)

Sports
Sports stats
initially for big 4 professional leagues
eventually adding college and golf, tennis, auto and horse racing
preformatted data packages include
daily report on selected team/player stats
value-added analysis tools and data
Prepared analytical views by experts. Program administrator will try to get sports personalities from major cities nationwide as well as a few national sportscasters. The program administrator will allow users to follow those they find compelling.
What info do you want
Sports personality ratings (for every team; based on what Terry believes is important, for the teams the user likes)
e.g. by Dan Deardorf
by Stan Savrin
by Terry Bradshaw
includes the categories important to the analyst and their thumbs-up or thumbs-down stat
overall rating by Dan defensively, etc.
Prepared profiles to assist users in selecting data. I give you my easy walk-through analysis and you give me the data that fits it (I want football teams and a simple comparison, you suggest them).

walks through important stats and what they show; allows user to select teams; prepares standard profiles for selected teams, including basic analysis

Direct user selection of categories and display (like TERMS)

user chooses categories
user chooses teams
program 31 builds grids

Warnings:

when team is on TV channel (allow user to select networks that are available); when team is coming to town; when major news events (trades, etc.) occur

Weather

data from single provider

includes city-by-city and airport reports and projections
includes zip-code locator for cities
includes graphical files prepared by data supplier

locator map

allows users to click to locate
increasingly accurate maps
global in scope
result in location that links to local weather data.

description by expert(s) - lets user view how Joe Denardo or Willard Scott views the weather and why.

Prepared profiles to assist users in selecting data. Very simple for weather: helps users to select their area and what weather items interest them. Emphasizes ability to select "weather warnings" from the system.

Direct User Selection of categories & display (like TERMS)
Warnings/Notices
Severe weather in their area or other areas they monitor
Good weather coming in potential vacation spots
Travel
data
centered on "from:" and "to:" cities
include schedules, pricing and seating class availability for airlines, buses and trains
preformatted data packages
allow user to simply select two cities (airports), date and time (optional) of travel, and view their travel options.
Sortable by time, cost, seating available
value-added analysis tools and data
Featured travel packages prepared by travel experts
Prepared profiles to assist users in selecting data
Easy walk-through analysis and program 31 gives the data that fits
What city are you in?
Where do you want to go?
When do you want to travel?
What's your greatest priority?
cost
convenience
non-stop
ADD this information to user profile
Direct user selection of potential flights
warnings/notices
discount fares to cities the user has examined;

poor travel conditions to cities the user has examined;
fares falling below a certain point to cities the user has selected

Telephone
Includes telephone, address and allows user to add E-mail and URL
value-added analysis tools and data
Allows user to send E-mail (when listed) directly to another user;
Allows user to build list of regularly used numbers and addresses (automatically generated from selected data);
Prepared profiles to assist users in selecting data;
Helps users to limit searches so they will be most effective
ADDs info from here to user profile
quick look-up feature (just give last name, first initial and state)
detailed searching: allows all users to search by name, address, E-mail, etc.
warnings:
when information changes that is listed in user list

Personals
data entered by users
data entry uses preformatted forms with many optional categories
value added analysis tools and data
Prepared analytical views for user entered profiles from Dr. Ruth to Oprah.
What kind of a person are you? What do you want?
Oprah's ratings (based on which items Oprah thinks are important)
age

smoker/non
cook?
Prepared profiles to assist users in entering data and giving importance to their data items. Easy walk-through analysis
Helps users to input their info (automatically lists them on network if they like, allowing anonymous entries and replies)
Completes search
Helps user send message
Direct user selection through browsing or complex searching
Warnings/notices
responses to ads placed
"most interesting singles ad of the week"
Oprah's latest recommendation for you

Classifieds
data entered by users
data entry uses preformatted forms with many optional categories (depending on product selected)
product
cost
size
weight
doors (2 or 4)
horsepower
cylinders
negotiable?
manufacturer
age/year of purchase
warranty?
location of item
text description
value-added analysis tools and data

Prepared analytical views for user entered profiles, from CarTalk to other industry experts.

What do you want? What are your priorities?

Car Talk ratings on makes, models, etc. for autos, and other experts on other categories:

CONSUMER REPORTS?

price

year

make/model

Prepared easy walk-through category selection

Helps users to select items they want, identifying and sorting by their most critical categories

Completes search

Helps user send message

Direct user selection through browsing or complex searching

Warnings/Notices

responses to ads placed

bidding/counter-bidding process

APPENDIX IV

Advertiser Reporting Features

Web-based reporting includes advertisements targeting the advertisers

Please contact me...I want to advertise on server 27

Place/delete ad packages (for existing accounts only)

Reporting

- Allows drill-down through to individual user level

Types of Reports

1. Overview of program 31 advertising
   - Broken down by ad packages
   - Shows
     - HTs purchased and achieved
     - CTs purchased and achieved
     - Purchases (if applicable)
     - Cost of package
     - Date specified by package
     - Can click through to detailed package reports
2. Detailed Package Reports (for individual packages)
   - Shows ads included in package
   - Media (visible/playable here)
   - HTs purchased and achieved
   - CTs purchased and achieved
   - Purchases (if applicable)
   - Cost of package
   - Demographic profiling requested
   - Demographic breakdown of success v. control group
3. Demographic Response Rates
   - Includes all packages or selected ones
   - Compares (if several) ad success by

demographic groups selected as important to advertiser
Automatically runs regression in background and suggests other demographic characteristics that are important factors in CTs and/or purchases
Allows advertiser to auto-generate a complete regression report for a specific package, subset of packages or all packages.

4. Psychographic Profiling
Includes all packages or selected ones
Compares (if several) ad success by psychographic groups selected as important to advertiser
Automatically runs regression in background
and suggests other demographic characteristics that are important factors in CTs and/or purchases
Allows advertiser to auto-generate a complete regression report for a specific package, subset of packages or all packages.

5. Mapping (U.S. or world locations)
Generates map to show program 31 user density v. the sponsor's CT or purchase density
Allows scalability

6. Regression (demographics)

7. Custom reports
Very like TERMS
Advertiser selects packages to analyze
Advertiser selects variables to consider
System generates reports
Custom reports can be saved on server 27

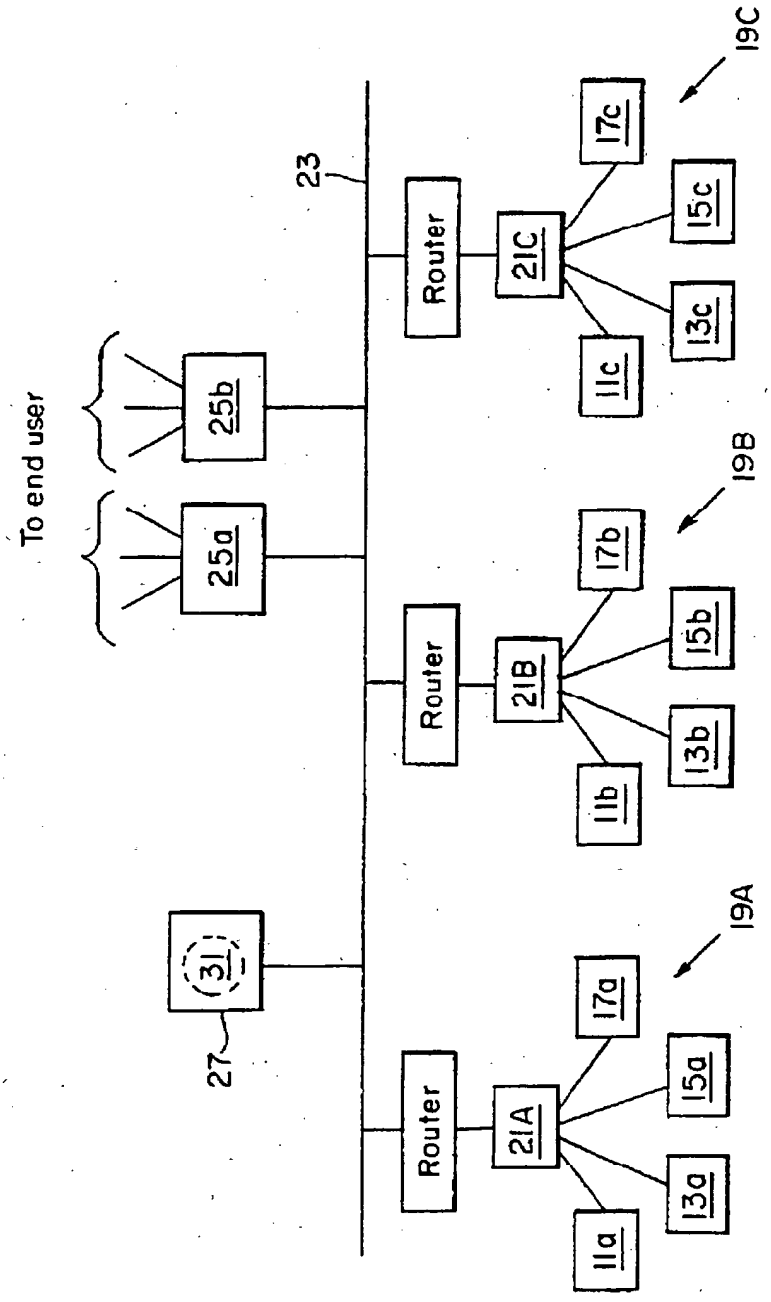

19C
17c
15c
13c
11c
21C
Router
23
25b
25a
To end user
19B
17b
15b
13b
11b
21B
Router
31
27
19A
17a
15a
13a
11a
21A
Router

FIG. 1

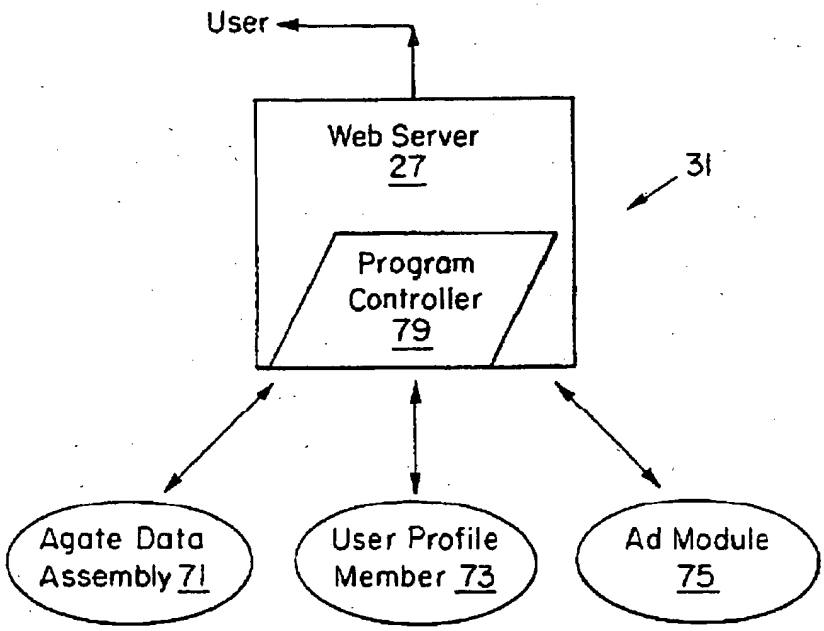

User
Web Server
27
31
Program
Controller
79
Agate Data
Assembly 71
User Profile
Member 73
Ad Module
75

FIG. 2

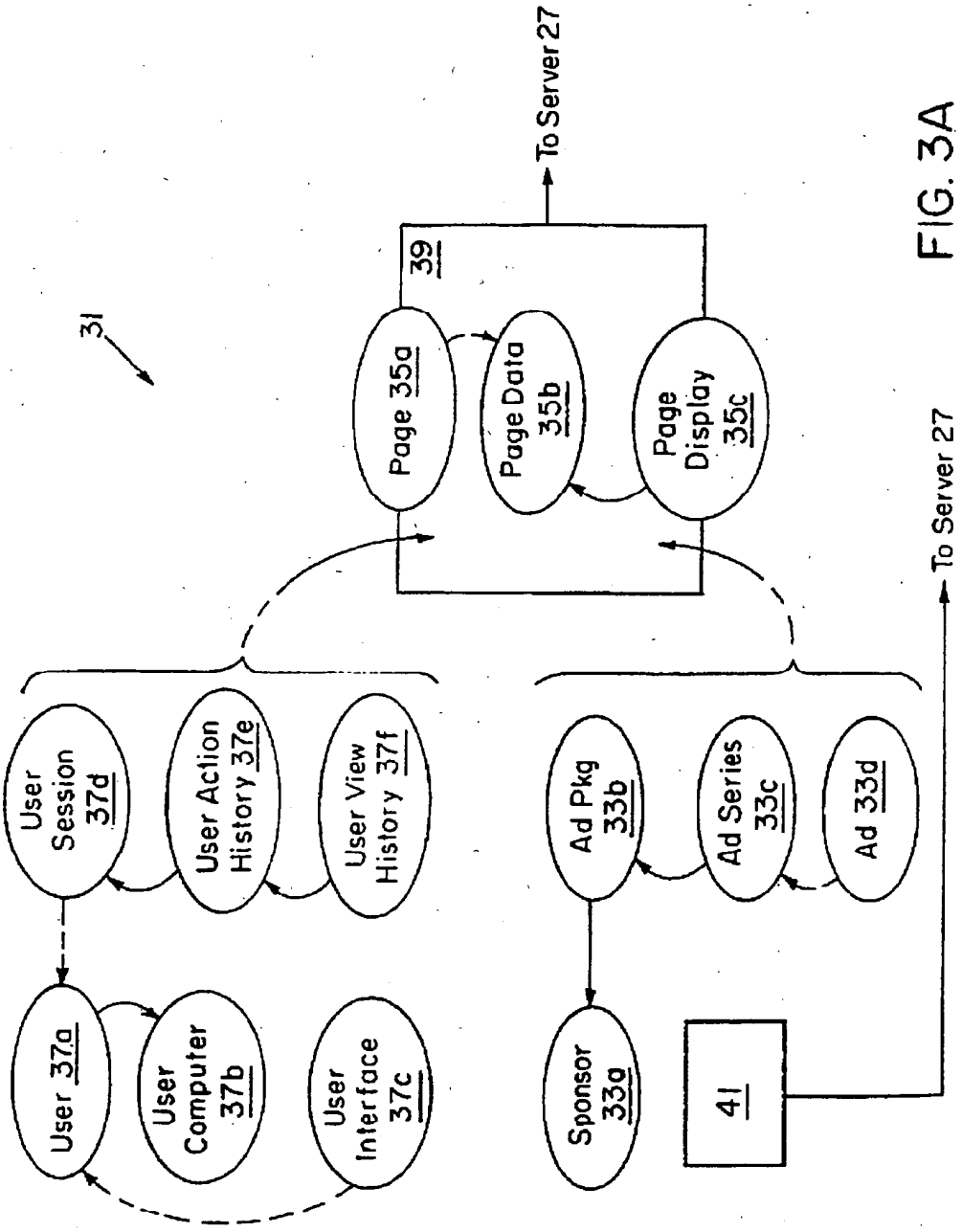

31
39
To Server 27
Page 35a
Page Data 35b
Page Display 35c
To Server 27
User Session 37d
User Action History 37e
User View History 37f
Ad Pkg 33b
Ad Series 33c
Ad 33d
User 37a
User Computer 37b
User Interface 37c
Sponsor 33a
41

FIG. 3A

User 37a

- identifiers
  - nickname
  - password (optional)
  - e-mail
    - forward all messages received to that user
  - postal address
  - phone
  - credit card
- attributes
  - language
  - geographic
    - country
    - home zip
    - work zip
    - home area code
    - work area code
    - cities of interest
  - demographic
    - gender
    - age
    - income bracket (estimated or volunteered)
    - occupation (volunteered)
  - lifestyle
    - language
    - smoker
    - orientation
    - lifestyle (vegetarian)
    - race
    - drinker
    - marital status
    - music
    - weight
    - height
  - Sponsor interest list (user choose from)
    - DW
    - Pepsi
    - Coke

FIG. 3B

enabling technologies
(use/don't use flag for each for this user) Even if don't use, track presence for advertiser reporting.
helper apps list - can user hear audio, video, what browser
plug-ins list
NLO list
persistent ActiveX objects

37b

FIG. 3C

User Interface Profile
User computer ID
categories
category display

37c

FIG. 3D

User Session
referring link
start datetime
end datetime
computer ID
browser type

37d

FIG. 3E

User Action History
action datetime
session ID
ordinal sequence identifier
page ID
object clicked ID
object position on page
what was the context of the object that precipitated the action
1st, 2nd, 3rd item?
Right or left side

37e

FIG. 3F

User Viewing History 37f

open datetime
leave datetime
ID
ordinal sequence identifier
precipitating action ID
related object ID
item ID
item orientation
orientation relative to related object ID (either a page or an object). Must track each orientation separately, in case an ad encompasses an object.
top
bottom
left
right
background

FIG. 3G

Messages / Notices and Warnings 45

to user
from user
include identifier
subject
message
ad package ID (optional, system choice if null; if designated ID is expired package, look for next package by advertiser. If none, system choice)
Page ID (to forward a page reference)
Link to additional info
Messages will be sent either internally * or * through e-mail
Notices and Warnings will always be sent internally and be duplicated through e-mail if possible.
Delivery Date
Read date (specific user read msg on date / time)

FIG. 4B



- **Stock Table**
  - portfolio
    - *open*
    - *bid*
    - *ask*
    - *last*
    - *$ change*
    - *52wk high*
    - *52wk low*
    - *p/e*
- Sports
  - Scores from previous 2-3 nights games in table
  - News
- Weather
  - 5 day forecast for local area
    - *High*
    - *Low*
    - *Precip*
  - 5 day forecast for interested cities
  - Weather warnings if any for local or interested cities
- Travel Schedule
  - Selected/purchased items that are coming within one week (Table showing options)
  - Specials advertised to areas of interest
- Directory
  - Typically called numbers for an area (in a table, names are hotlinks for any with e-mail)
- Messages
  - Classified replies
  - Personals replies
  - Real Estate replies

FIG. 4A

33a

Sponsor

- company name
- user IDs
- contact info (for users to contact our sponsors)
  - phone
  - e-mail
  - URL
  - Fax
  - Mail
- account contact info
  - phone
  - e-mail
  - URL
  - Fax
  - Mail
- IP Domain list
- Demographic profiling
  - Type of business
    - SIC Code
    - SIC Industry name
  - Size of company
    - employees
    - revenues
    - earnings
  - Location
  - Local/Regional/National/Multi-national/Global
  - Producer
  - Publically traded (yes/no)
  - Exchange listings
- Customized Report Configurations-Standard Reports per ad
  - Packages included (default is all)
  - Variables included
  - Display preferences
    - Include regression ?
    - Graphical ?
    - Show control group ?

FIG. 5A

33b

Ad Package

- Sponsor ID
- Info for exact # purchases
  - Number of Purchased Hits
  - Number of Purchased Clickthroughs
- Info for scaled purchases (up to...)
  - Max Hits
  - Max Clicks
- Start Datetime (if not present, active until end date)
- End Datetime (if not present, is active after start date)
- # hits (derived)
- # clicks (derived)
- pricing of ad package
  - hit
  - clickthrough
  - order

FIG. 5B

33c

Ad Series

- package ID
- intended demographic profile(s) list
- category (product/service)
- daily start time-hr. of day
- daily end time
- Display Days of week
- Start Datetime (if not present, active until end date)
- End Datetime (if not present, is active after start date)
- Max. series views per user
- Max. series views per user per day

FIG. 5C

33d

Advertisement

series ID (must be present for all ads in a series, or null for all if random display is desired)
series sequence
display characteristics
    daily start time
    daily end time
graphic ref's
    multi-format
sound ref(s)
multimedia refs
X-type Refs (e.g. shockwave)
text-only format

FIG. 5D

OPIC
OFFICE DE LA PROPRIÉTÉ INTELLECTUELLE DU CANADA

CIPO
CANADIAN INTELLECTUAL PROPERTY OFFICE

(21) (A1) 2,252,568
(86) 1997/04/22
(87) 1997/11/06

messages publicitaires aux utilisateurs sélectionnés de façon appropriée. Une analyse de régression des réactions enregistrées de la première catégorie d'utilisateurs visionnant les messages publicitaires permet d'affiner le profil de l'utilisateur. Le visionnement et l'analyse de régression des réponses enregistrées des catégories suivantes d'utilisateurs permettent de cibler automatiquement et de personnaliser de façon continue les messages publicitaires visant un public composé d'utilisateurs finaux désirés.

is refined. Viewing by and regression analysis of recorded responses of subsequent sets of users continually auto-targets and customizes ads for the optimal end user audience.